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THE DETAILED COMPOSITION OF FECES, SWEAT, AND URINE: AN ANNOTATED BIBLIOGRAPHY

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SPECIAL BIBLIOGRAPHY
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ABSTRACT

The increased importance of closed-cycle life support systems has produced a need for accumulating information on by-products of human metabolism. This publication consists of 598 references covering the composition of feces, sweat, and urine. Topics which are discussed include methods of analysis; the constancy at which the formed or waste products are created; and the relative influence exerted thereon by diet, climate, body activity, and stress.

Most of the references were published between January 1957 and June 1962. The references are alphabetically arranged according to the first author. A subject index is included.

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1. Abul-Fadl:M.A.M.
Determination of β-glucuronidase activity in urine.
J. CLIN. PATH. 10:387–389 (1957).

2. Adams, E. C., Burkhart, C. E. and Free, A. H.
Specificity of glucose oxidase test for urine glucose. SCIENCE 125:1982–1083 (1957).

3. Adams, R., Johnson, R. E. and Sargent, F.
Osmotic pressure (freezing point) of human sweat in relation to its chemical composition.
QUART. J. EXP. PHYSIOL. 43:241–257 (1958).

Forearm sweat collected from men performing excerise in moist heat was hypotonic to serum in total osmolarity, Na and Cl; about isotonic in urea, ketone bodies and creatinine; and hypertonic in K, NH_3, lactate and H. Because the measured osmolarity was > the sum of the osmotic effects of measured constituents in most specimens, an 'unmeasured osmol' in sweat was postulated. This and total osmolarity decreased with increasing rate of sweating. Total sweat is composed of 2 kinds, one predominating at low sweating rates and the other at high.

4. Adler, M. and Gutman, A. B.
Uridine isomer (5-ribosyluracil) in human urine.
SCIENCE 130:862–863 (1959).

A substance isolated from human urine by anion exchange absorption and paper chromatography corresponded in u.v. absorption spectrum and chromatographic mobilities with 5-ribosyluracil. In a normal male, excretion was 18 mg./24 hr., and in a gouty male, 41 mg./24 hr. day, both subjects being on a diet free from foods rich in nucleic acids and excluding tea and coffee. An endogenous origin of the uridine isomer is considered likely.

5. Albert, A. and Silver, L.
Recovery of human pituitary gonadotrophin from dilute urine. ENDOCRINOLOGY 61:587–590 (1957).

The recovery is impaired if the urine is diluted with water so that the specific gravity is comparable to that obtained when the urine output is 51./day. Recovery becomes

normal if NaCl is added to the diluted urine to bring it to a specific gravity of 1.025.

6. Kobi, A. A., et al.
Purification of pituitary gonadotropin from urine of normal men. J. CLIN. ENDOCR. 21:1–20, Jan 1961.

7. Albrecht, A. M. and Broquist, H. P.
Evidence for occurrence of 10-formyltetrahydrofolio acid in human urine. PROC. SOC. EXP. BIOL., N. Y. 92:158–163 (1956).

8. Allison, A. C., Blumberg, B. S. and Gartler, S. M.
Urinary excretion of β-amino-isobutyric acid in Eskimo and Indian populations of Alaska. NATURE 183:118–119 (1959).

The results show higher excretion rates of β-amino-isobutyric acid by the Eskimo and Indian populations studied compared with those of the Whites, but the results are not sufficient to allow any conclusions regarding the origin of the Athabascan or Eskimo groups.

9. Alperovich, B. D.
Lipoids in urine precipitates. LABOR. DELO No. 5: 9 (In Russian)

The presence of drops of lipoids in the urine in association with considerable albuminuria may indicate the presence of lipoid nephrosis.

10. Ammon, R. and Ney, K. -H.
Arylsulphatase of human urine. ARCH. BIOCHEM. BIOPHYS. 69:178–185 (1957).
(In German)

The urinary arylsulphatase of women is higher than that of men, but shows greater

variations. The activity is highest between the ages 20−30. The enzyme was purified by acetone precipitation.

11. Anderson, R., et al.
THE DETERMINATION OF CREATINE IN BIOLOGIC FLUIDS. School of Aviation Medicine, Randolph Air Force Base, Tex. Rept. no. 57-87, May 1957, 6p. (In cooperation with U. of Texas). ASTIA AD-143 024.

A method for the determination of creatine in urine and in plasma is described which makes use of ion-exchange columns for the reduction in concentration of (a) the inhibitors of the diacetyl reaction, (b) arginine, and (c) creatinine to levels which do not affect the diacetyl reaction. Chromatographic methods for the separation of creatine and creatinine are described. Creatine is developed by the diacetyl reaction (Barritt modification), and creatinine by the alkaline picrate reaction.

12. Anderson, A., Ziegler, M. R. and Doeden, D.
Banana feeding and urinary excretion of 5- hydroxy indoleacetic acid, [5-HIAA]. SCIENCE 127:237−238 (1958).

In rhesus monkeys, excretion of 5-HIAA rose to 5−30 times the normal value after ingestion of 50-150 g. banana. Iproniazid (to inhibit the amineoxidases which convert 5HT to 5-HIAA) given i.p. results were obtained in 2 children fed banana. These increases in 5-HIAA excretion after banana feeding are of the order observed in patients with carcinoid tumour and could lead to erroneous diagnosis.

13. Angielski, S.
Amino acids in the urine of mono- and di-zygotic twins. ACTA BIOCHIM. POL. 5:75-89 (1958). (In Polish)

The amino acid composition of diurnal urine mono- and di-zygotic twins, aged between 2.5 and 5 years was investigated by paper chromatography. Quantitative determinations covered total and α-amino nitrogen, and amino acids, before and after desalting on Dowex 50. In spite of some differences with time, the results show similarity in amino acid content in the urine of monoqygotic twins. The similarity is much smaller in the case of dizygotic twins.

14. Armbruster, W., Schafer, R., and Schaefer, K.
Influence of drugs on excretion of amino acids in urine. SCHWEIZ. MED. WSCHR. 6:147-149 (1957). (In German)

A paper chromatographic method for the determination of amino acids in human urine is described. The findings in normal urine are reported, including the occurrence of an unknown amino acid RF 0.75 (80 percent aq. phenol). Administration of 100 mg. of synthetic L-ascorbic acid increases the excretion of essential and non-essential amino acids. An extract from potatoes and carrots, although containing vitamin C produced by diminution in the excretion of amino acids.

15. Armstrong, M. O. and Shaw, K. N. F.
Occurrence of (-)-β-m-hydrozyphenylhydracrylic acid in human urine. J. BIOL. CHEM. 225:269-278 (1957).

The above compound has been identified as one of the major phenolic acids present in most samples of human urine. The amount excreted daily by adults ranges from 2-150 mg., with most individuals excreting about 10 mg. Both m-hydroxyphenylhydracrylic acid and m-hydroxyhippuric acid originate, for the most part, from materials in the diet.

16. Armstrong, M. O., et al.
Indole acids of human urine. Paper chromatography of indole acids. J. BIOL. CHEM. 232:17-30 (1958).

The behaviour of 38 indoles, mainly acids, during 2-dimensional paper chromatography, is described. The chromatographic properties of 38 compounds which are presumed to contain an indole nucleus and which have been detected in normal and pathological human urines are described; 10 of these are tentatively identified. The following have not been previously reported in urine: indolylacetylglutamic acid, acetyltryptophan, indol-3-ylcarboxylic acid, indolylacrylic acid, indolylacetamide, and indolylglycollic acid. The possible significance of the presence of these and other substances in urine is discussed briefly.

17. Armstrong, M. O. and Shaw, K. N. F.
Occurrence of (-)-β-m-hydrozyphenylhydracrylic acid in human urine. J. BIOL. CHEM. 225:269-278 (1957).

The above compound has been identified as one of the major phenolic acids present in most samples of human urine. The amount excreted daily by adults ranges from 2-150 mg., with most individuals excreting about 10 mg. Both m-hydroxyphenylhydracrylic acid and m-hydroxyhippuric acid originate, for the most part, from materials in the diet.

18. Arroyo, J.
Synoptic picture of the cells in urinary sediments. MED. REV. MEX. 40:147-151, 10 Apr 1960. (In Spanish)

19. Arroyo, J.
Description in outline form of the crystals in urinary sediments. MED. REV. MEX. 40:265-273, 25 Jun 1960. (In Spanish)

20. Arroyo, J.
Outline description of the bacteria in urine sediments. MED. REV. MEX. 40:377-383, 25 Aug 1960. (In Spanish)

21. Arroyo, J.
Synoptic picture of parasites in urinary sediments. MED. REV. MEX. 40:473-477, 25 Oct 1960. (In Spanish)

22. Ayres, P. J., et al.
Method for determination of aldosterone, cortisol and corticosterone in biological extracts, particularly applied to human urine. BIOCHEM. J. 65:639-646 (1957).

A fluorimetric method is described for the determination of aldersterone cortisol and corticosterone in human urine. The average value for the 24 hour urinary excretion of aldosterone and cortisol by normal humans are 11 μg. (31 cases) and 35 μg. (24 cases), respectively. The values found in various pathological conditions vary considerably from these average values.

23. Bahadur, K. and Chandra, V.
Decomposition of urea by urease.
ENZYMOLOGIA 21:1-12, 1 Sep 1959.
(In English)

24. Bakalov, D.
Is an amphoteric reaction with urine possible?
SUVR MED (Sofia). 11:71-76 (1960).
(In Bulgarian)

25. Baker, H., et al.
Comparative study of vitamin B_{12} assay in urine. PROC. SOC. EXP. BIOL., N. Y. 91:636-638 (1956).

26. Banerjee, D. K., et al.
Microbiological assay of folic acid in serum and urine. BULL. CALCUTTA SCH. TROP. MED. 4:65–66 (1956). (In English)

Folic acid was estimated by microbiological assay using Streptococcus faecalis R as test organism. Treatment of the serum folic acid conjugates with chicken pancreas extract to release the free folic acid was a satisfactory procedure. Urinary folic acid was already mostly in the free form. The method measures folic and folinic acids together.

27. Barac, G. and Quadens, O.
Colorimetric estimation of two axotriiodothyronines in different media. BULL. SOC. CHIM. BIOL. (Paris) 38:1055–1062 (1956). (In French)

Proof that the Beer-Lambert law is followed in colorimetric estimation of azotriiodothyronines in pure solutions of plasma or urine is given. Maximum absorption of a pure solution in water is at 500 mμ. In the presence of plasma or urine it drops to 430 mμ. The change is due to pH. Between pH 5.8–7.4 maximum absorption is at 430 mμ. and at 9 the maximum is at 500 mμ.

28. Barker, E. S., et al.
Renal response in man to acute experimental respiratory alkalosis and acidosis. J. CLIN. INVEST. 36:515–529 (1957).

Six normal male subjects actively hyperventilated and 6 inhaled CO_2 for approximately 30 minutes. In respiratory alkalosis H was retained by the kidney HCO_3 and K output was increased. Urine pH rose and titratable acidity, NH_4 and PO_4 excretion fell. Changes observed during respiratory acidosis were opposite to those seen in alkalosis.

29. Barker, E. S., Elkinton, J. R. and Clark, J. K.
Renal excretion of Mg in man. J. CLIN. INVEST. 38:1733–1745 (1959).

30. Barlow, J. J. and Kellie, A. E.
Quantitative method for chromatographic separation of 17-oxo steriod sulphates from 17-oxo steriod glucuronides: with observations on behaviour of conjugated corticosteroids on same system.
BIOCHEM. J. 71:86 (1959).

Extracts of urine containing the steroid conjugates were chromatographed by absorption on a column of neutral alumina. Steroid SO_4 and glucuronides were retained during subsequent elution with ethanol which removed solid matter. 17-oxo steroid SO_4 were eluted with aqueous 50 percent (v/v) ethanol and the 17-oxo and 17-oxogenic steroid glucuronides were removed by treatment with M-acetate, buffer, pH 5. The recovery of steroid conjugates from the column was practically quantitative and no evidence of molecular rearrangement could be found.

31. Barrueto, R. B., Mager, M. and Bass, D. E.
Measurements of rates of excretion of sweat solutes under physiological conditions. J. APPL. PHYSIOL. 14:435–438 (1959).

An apparatus is described which collects sweat quantitatively from the arm and permits regulation of skin temperature independently of ambient conditions. Rates of excretion of Na, K, C, "apparent" creatinine and urea from the arm enclosed in the apparatus were the same as for the unenclosed arm.

32. Bassir, O.
Effect of diet on renal excretion of urea by the Nigerian. WEST AFRICAN J. BIOL. CHEM. 1:61–66 (1957).

The urine concentration in a group of well-fed (29) students has been compared with that of 14 manual workers of similar age range (22–28 years) living on low animal-protein indigenous diets, following a dose of 15 g. urea. The mean of both groups was well below the normal values for Europeans. The well-fed group was also inefficient in their renal clearance of fasting blood urea.

33. Bass, D. E., Mager, M. and Barrueto, R. B. Effect of a vapour barrier on rates of excretion of sweat solutes. J. APPL. PHYSIOL. 14:431–434 (1959).

Sweat was collected simultaneously from both arms, one being enclosed in a polyethylene bag. Wearing the vapor barrier decreased K excretion but increased true and "apparent" creatinine, NA and C1 excretion were not affected. Increase in local skin temperature increased Na, K, C1 creatine and urea excretion. Increased relative humidity decreased Na, C1, K and urea excretion but did not influence creatinine. The effect of the polyethylene bag can be related to the effect on skin temperature and relative humidity.

34. Baulieu, E. E., Weinman, S. H. and Jayle, M. F. Analysis of urinary neutral 17-ketosteroids, selective hydrolysis, identification and estimation using paper chromatography. BULL. SOC. CHIM. BIOL. (Paris) 39:1371–1394 (1957). (In French)

A method is described for the identification and estimation of neutral 17-KS, based on selective hydrolysis using TCA-dioxan and a purified β-glucuronidase, followed by paper chromatography.

35. Bauld, W. S. Method for determination of oestriol, oestrone, and oestradiol-17β in human urine by partition chromatography and colorimetric determination. BIOCHEM. J. 63:488–495 (1956).

A method is described for the extraction, separation, and purification of oestriol, oestrone, and oestradiol-17β in human urine. It involves acid hydrolysis, extraction with ether, separation of oestriol from oestrone and oestradiol-17β by partition between benzene and water, purification of the oestriol by saponification and column partition chromatography, and separation and purification of oestrone and oestradiol-17β by column partition chromatography and saponification. Each fraction is determined separately by an improved Kober reaction.

36. Baum, H., Dodgson, K. S. and Spencer, D.
Assay of arylsulphateses A and B in human urine.
CLIN. CHIM. ACTA 4:453–455 (1959).

37. Beale, R. N. and Croft, D.
Sensitive method for colorimetric determination
of urea. J. CLIN. PATH. 14:418–424 (1961).

This direct colorimetric method depends on the magenta color developed when diacetylmonoxime and phenylanthranilic acid react with urea. Chloride ions were used to sensitize the reaction, and manganous ions stabilised the color to light and time. Phosphate enables the reaction to be reproduced to within ± 10 percent, even at urea levels of only 40 mg. percent. The method is rapid and suitable for routine analysis. The mechanism of color formation is discussed.

38. Berger, H.
Estimation of urinary amino acids and its
clinical significance. SCHWEIZ. MED. WSCHR.
86:711–714, 729–732 (1956). (In German)

The technique of paper chromatographic determination of amino acids in urine is described. R_F-values for 38 amino acids in two solvents are given and a two dimensional chromatrogram is illustrated. The physiology and pathology of amino aciduria are discussed, including the congenital disorders of metabolism.

39. Berlyne, G. M.
Urinary hyaluronidase. NATURE 185:389–390
(1960).

There is no relationship between hyaluronidase output (units/min.) and urine flow (ml./min.).

40. Bernhard, E.
On the evaluation of positive reducing phenomena in the urine. A suggestion. PRAXIS
49:558–561, 2 Jan 1960. (In German)

41. Science and Tech. Div., Library of Congress, Washington, D. C. BIBLIOGRAPHY ON SALIVA. ONR rept. no. ACR-48, Mar 1960, 447p. ASTIA AD-238 111.

The abstracts are arranged alphabetically by the surname of the senior authors. The spelling of author's names is that which appeared in the original source. Each reference is listed as follows: author(s) title, journal, year, and abstract. In the case of articles from foreign literature, the title appears in the foreign language along with a translation and an abstract in English. In many instances the abstracts are those of the author(s). A subject index, keyed to the authors' names and to page numbers, will be found at the end of the Bibliography. After the listing of a particular subject, authors' names are presented with the year of their publications, and this is followed by the page number in the Bibliography where the abstract may be found. For example: Amylase, alcohol, Bang, I., 1911, p.20. Finally, this compilation is not intended as a textbook on saliva, but is a guide to the existing literature in this extremely important and growing area of biologic research. The coverage of the literature is complete through 1957, with additional coverage of only specific journals such as the Journal of Dental Research, and Oral Surgery, Oral Medicine, and Oral Pathology, through 1958. 2500 references.

42. Bischoff, F. and Torres, A. Fluorimetric determination of urinary adrenaline. J. APPL. PHYSIOL. 14:237–240 (1959).

The modifications described eliminate the non-specific blank obtained in other methods and the results at rest are similar to those obtained by bioassay.

43. Blane, G. F. Urinary 17-ketosteroids and ketogenic steroids in a mixed Jamaican population. LANCET i:498–500 (1959).

The mean daily 17-KS excretion for a group of colored Jamaicans was not significantly different from that of Europeans living under the same conditions, Mean 17-ketogenic steroid excretion was significantly lower in the Jamaicans.

44. Blegen, E., Bygren, T., and A. Vogt
Renal excretion of urea. ACTA PHYSIOL.
SCAND. 39:47–54 (1957).

Experiments are described, the results of which are in complete disagreement with the findings of workers who have claimed that urea loading promotes the tubular secretion of urea. 18 clearance experiments were made with 5 dogs, with a total of 87 clearance periods in one series; in another series i.v. urea loads were administered and studies made in 76 clearance periods. In no case was urea clearance > creatinine clearance.

45. Bloxsom, A.
Electrical conductivities of normal sweat and that
of patients with fibrocystic disease. ARCH.
DIS. CHILDH. 34:420–421 (1959).

Conductivities of sweat, expressed relative to standard NaCl solutions, parallel the concentration of electrolytes present and their determination constitutes a quick, simple and inexpensive error-free procedure that can be used in the study of fibrocystic disease of the pancreas.

46. Blum, W.
The urine culture. AMER. J. MED.
TECHN. 26:215–217, May–Jun 1960.

47. Boeri, E. and Rippa, M.
Effect of urea on flavocytochrome $\underline{b_2}$.
ARCH. BIOCHEM. 94:336–341 (1961).

3M urea produced a reversible inactivation; higher urea concentrations inactivated irreversibly. Chromatography of the urea-treated enzyme on a Ca triphosphate column showed that the enzyme molecules split into a polynucleotide, a flavin fraction and a haemoprotein. Some properties of these were examined.

48. Bongiovanni, A. M. and Eberlein, W. R. Renal clearnace of neutral 17-ketosteroids in man. J. CLIN. ENDOCR. 17:238–249 (1957).

The renal clearance of androsterone in man has been shown to be much greater than that of dehydroepiandrosterone. This explains the preponderance of the latter in human plasma on the basis of renal factors rather than on the basis of an inordinately high production of this steroid. The rapid renal clearance of androsterone, on the other hand, accounts for its greater concentration in human urine and indicates that its overall production is greater than that of dehydroepiandrosterone in man. The renal excretion of androsterone is inversely proportional to the raised blood levels produced by its administration, and is inhibited by probenecid; androsterone is thus eliminated by tubular excretion rather than glomerular filtration. It is unlikely that dehydroepiandrosterone is reabsorbed by the renal tubules after significant glomerular filtration since its urinary excretion is not enhanced by probenecid. The renal clearance of β-cortolone was also determined.

49. Bonner, R. H. THE EFFECTS OF STRESS ON UROPESIN EXCRETION. Aero Medical Lab., Wright Air Development Center, Wright Air Force Base, Ohio. WADC Tech. note no. 57-427, Dec 1957, 11p. ASTIA AD-142 256.

The effect was investigated of various forms of stress, as encountered in certain AF operational situations, on uropepsin excretion in urine. Twenty-three subjects were tested under conditions of prolonged positive G, crew confinement, exposure to high temperature-high altitude, and visual and auditory deprivation. Volumes, specific gravities, and collection times were recorded for the urine samples taken from the crew. The assay method of M. L. Anson (J. Gen. Physiol. 22:79, 1938) was used with some modification. The order of adding reagents was shown to be significant in developing color to reflect the degree of uropepsin excretion. An attempt was made to determine which proteolytic enzyme was being measured. The greatest activity was observed at pH 1.5 which is optimum for pepsin, indicating that pepsin was the enzyme being measured. The results showed that uropepsin excretion increased before the application of specific simulated flight stresses and decreased during the application of specific simulated flight stress. Deprivation of visual and auditory stimuli did not produce any significant change in uropepsin excretion from pretest levels.

50. Borell, S.
Simplified procedure for determination of urinary dehydroepiandrosterone. J. CLIN. ENDOCR. 21:1321–1327 (1961).

Values for urinary dehydroepiandrosterone, determined by measuring the Pettenkofer-reacting material in ketonic extracts of urine after hydrolysis by the 2-phase solvolysis procedure of Burstein and Lieberman, agreed well with those determined by the chromatographic method of Fotherby. The same results were also obtained in the ketonic extracts of urines prepared by the author's procedure. The latter method is easier than the chromatographic techniques and shorter than the solvolysis method, and is recommended as a useful procedure for the routine, clinical determination of dehydroepiandrosterone excretion.

51. Borth, R., Linder, A. and Riondel, A.
Urinary excretion of 17-hydroxycortiocosteriods and 17-ketosteriods in healthy subjects in relation to sex, age, body weight and height. ACTA ENDOCR. (Copenhagen) 25:33–44 (1957). (In English)

Urinary 17-hydroxycortiocosteriods and 17-ketosteriods were determined in 172 healthy male and female subjects of all age groups up to 90 years. By multiple regression analysis of 150 of the data, excretion levels were shown to be correlated with the 1st, 2nd and 3rd powers of age, and with body weight and height. The effects of these factors were the same in both sexes, but they differed for the 2 steroid fractions. These latter differences are described. Graphs of expected normal excretion were constructed for subjects of average body weight and height.

52. Bowness, J. M.
Chromatography on alumina of 17-ketosteroid material from each of the [above] six ethnic groups. AUST. J. EXP. BIOL. MED. SCI. 35:417–420 (1957).

The differences between the ethnic groups in relative amounts of the 8 fractions produced by alumina chromatograpny in no case paralleled the differences found in 17-ketosteroid excretion. The relative proportions of the fractions were roughly the same in each group.

53. Boyce, W. H. and Sulkin, N. M.
Biocolloids of urine in health and in calculous disease. III. The mucoprotein matrix of urinary calculi. J. CLIN. INVEST. 35:1067–1079 (1956).

The microscopic structure and histochemical properties of the matrix recovered from 676 calcigenous stones after decalcification with chelating agents is described.

54. Boyce, W. H. and King, J. S.
Total nondialysable solids of human urine. IV. Electrophorectic property of RS-1 subfraction. J. CLIN. INVEST. 38:1525–1537, Jun 1959.

The RS-1 fraction (non-ultrafiltrable fraction of human urine solution in veronal buffer pH 8.6) is analysed electrophoretically at pH 8.6 and 4.5. Three subfractions prepared by Cohn's method 10 using low temperature low concentration of ethanol and of Zn acetate were also analysed. These fractions (Cohn I, II and III, IV and V, and Fraction VI) and their crude precursor have protein components all with isoelectric points below pH 4.5. The majority, if not all, have their counterparts in blood plasma.

55. Boyce, W. H., King, J. S., Jr. and Fielden, M. L.
Total nondialysable solids (TNDS) in human urine. IX. Immunochemical studies of the R-1 "uromucoid" fraction. J. CLIN. INVEST. 40:1453–1465, Aug 1961.

56. Braude, A. I., Siemienski, J. and Jacobs, J.
Protoplast formation in human urine. TRANS. ASSN. AMER. PHYSICIANS 74:234–245 (1961).

57. Brebner, D. F., McK. Kerslake, D. and Waddell, J. L. Atmospheric himidity on skin temperatures and sweat rates of resting men at two ambient temperatures. J. PHYSIOL. (London) 144:299–306 (1958).

Skin temperature, mouth temperature and sweat rate were measured on nude resting subjects at ambient temperatures of 36° and 40° over a wide range of humidity. The quantities were little affected by humidity below a critical level above which all changed markedly with humidity. The critical humidity level was consistent with predictions based on the physical processes of heat exchange from wet skin. Effective temperature did not appear to provide a satisfactory measure of environments of equal heat stress, but the 4 hour 'Sweat Rate Index' was in good agreement with the observations.

58. Breener, D. F. and Kerslake, D. M. The effect of altering the skin temperature of the legs on the forearm sweat rate. J. PHYSIOL. (London) 157:363–369, Jul 1961.

59. Breener, D. F. and Kerslake, D. M. The effect of cyclical heating of the front of the trunk on the forearm sweat rate. J. PHYSIOL. (London) 158:144–153, Sep 1961.

60. Brodsky, W. A. and Carrasquer, G. Mechanisms of acidification of the urine. PROGR. CARDIOV. DIS. 5:105–133, Sep 1961.

61. Brontman, A. Ia.
Hyaluronidase activity of human urines from different age groups. PEDITRICIA 12:58–60 (1957). (In Russian)

During diuresis exceeding 1 ml./min./m^2 body surface the urine of healthy subjects is practically without hyaluronidase activity. At lower urine flow rates hyaluronidase activities increase in direct proportion. At 0.08 ml./min./m^2 a maximum activity of 30 relative units per 0.5 ml. urine is attained. Urines of children up to the age of 2 months have increased stable hyaluronidase activity for urine outputs above 1 ml./min./m^2. With lower urine flows this activity decreases proportionately and ceases completely at a diuresis 0.2 ml./min./m^2. Gradual decreases in hyaluronidase activity occur in urines of children from 2–6 months. These depend on the degree of diuresis and are intermediate between those of newborn and older subjects at rates of flow greater than 1 ml./min./m^2. In children older than 6 months the curve relating urine hyaluronidase activity and diuresis becomes characteristic of the age group.

62. Brooksbank, B. W. L. and Salokangas, A.
Fractional analysis of urinary neutral 17-KS in relation to age. ACTA ENDOCR. (Copenhagen) 30:231–241 (1959). (In English)

The change in the proportion of the 17-KS with the onset of old age is a fall in the ratio of output of 11-deoxy-17-KS to 11-oxy-17KS. It is more marked than has been reported by most workers. Some fractional analyses in younger subjects are given for comparison. Components of unknown identity were seen on chromatograms.

63. Brown, J. B., Bulbrook, R. D. and Greenwood, F. C.
Estimation of oestriol, oestrone and oestradiol-17β in human urine. I. Evalution of chemical method. J. ENDOCR. 16:41–48 (1957).

The method described by Brown for the estimation of oestrone, oestradiol-17β and oestriol in urine has been critically investigated. All checks on specificity so far carried out have confirmed that the method is specific for these oestrogens. The method gives recoveries of 70–95 percent. For oestrogen levels between 0.0 and 40.0 μg./24 hr. the fiducial ranges and percent errors of determinations, the limits of sensitivity and the precision of the method have been calculated. A number of substances which may occur in urine and which interfere in the method are listed.

64. Brown, J. B., Bulbrook, R. D. and Greenwood, F. C. Estimation of oestriol, oestrone and oestradiol-17β in human urine. II. Additional purification. J. ENDOCR. 16:49–56 (1957).

A modification of a method for estimating urinary oestrogens is described and its accuracy confirmed; it gives practically the same results as the original method for most urine specimens. In a large series of comparisons, however, small but significant differences are found in the amounts of oestrone and oestriol measured by the 2 methods. Interference caused by administration of certain drugs or by the secretion of large amounts of neutral steroids is reduced or abolished by using the modified method. The amounts of impurities in the final urine extracts are reduced by approximately 50 percent.

65. Brown, J. H. U. and Asher, H. Influence of urine volume on output of corticoids by normal human subjects. PROC. SOC. EXP. BIOL., N. Y. 99:642–645 (1958).

The influence of urine volume on excretion of corticoids was determined in normal human subjects. There was a direct correlation between steroid output and urine volume, whether measurements were made on a long time basis, (day by day) or a short time basis (min. by min.). Subjects tested under water and salt loads and with ADH also showed the same positive correlation. As a corollary, clearance of steroids was measured, and found to be 1 ml./min. for free corticoids, and 4 ml./min. for bound corticoids.

66. Brown, M. E. Measurements of specific gravity of urine by means of a single gradient column. AMER. J. CLIN. PATH. 29:188–190 (1958).

A drop technique, based on the use of specific gravity gradients in a single graduated cylinder, was modified for measuring specific gravity of small volumes of urine.

67. Brown, R. R. and Price, J. M.
Quantitative studies on metabolites of tryptophan in urine of dog, cat, rat, and man. J. BIOL. CHEM. 219:985–997 (1956).

Kynurenine and kynurenic acid were the chief urinary metabolites of tryptophan in the dog, rat, and man. N-Methyl-2-pyridone-5-carboxamide was an important metabolite of trytophan in man but not in the other species. Xanthurenic acid was an important metabolite in the rat and man but not in the dog or cat. 4-Qinolone and its N-methyl derivative could not be detected in the urine. Quinaldic acid or some chemically similar compound was excreted in increased amounts after the administration of tryptophan to man and the dog.

68. Brown, R. R., et al.
Trytophan metabolism in human subjects. II. Urinary tryptophan metabolites on low-niacin diet. J. NUTR. 66:599–606 (1958).

The urinary excretion of 10 tryptophan metabolies by young women was very low when the tryptophan intake was 25 mg./day. With increasing dietary tryptophan supplements, the excretion of N-methyl-2-pyridone-5-carboxamide remained low until the blood pyridine nucleotide levels were restored. The excretion of the other tryptophan metabolites followed more closely the tryptophan intake.

69. Bulbrook, R. D., Greenwood, F. C. and Williams, P. C.
Comparisons of biological and chemical estimations of urinary oestrogens. I. Urine from normal men and women and a eunuch. J. ENDOCR. 15:206–210 (1957).

The oestrone, oestradiol-17β, and oestriol, determined chemically, agreed satisfactorily with the oestrogen content of the phenolic fraction of the rest of the urine, assayed biologically, in 10 of 11 samples of normal urine.

70. Bulmer, M. G. and Forwell, G. D.
SODIUM AND POTASSIUM IN THERMAL SWEAT. Flying Personnel Research Comm., Institute of Aviation Medicine, RAF (England). Rept., Nov 1954. ASTIA AD-59072.

The hypothesis is put forward that sweat is produced from a precursor fluid with the same sodium concentation as interstitial fluid and that the sweat glands, during its passage through them, retain an amount of sodium which is constant and independent of the sweat rate, provided the latter is sufficiently high.

Deductions from this hypothesis are shown to hold good when the sweat sodium is greater than about 50 mEq./1.; below this concentration sweat behaves as if sodium retention were less than maximal.

Sweat potassium concentration is independent of sweat rate.

Sweat potassium falls during acclimativation to a concentration just under 2 mEq./1. greater than serum potassium.

71. Bulmer, M. G.
Concentration of urea in thermal sweat. J. PHYSIOL. (London) 137:261–266 (1957).

Urea was measured simultaneously in arm-bag sweat and blood of six men. The sweat/blood urea ration was always > 1 but decreased towards 1 as the sweat rate increased. Urea may be regarded as a tracer for water reabsorption from the sweat and it is concluded that the amount of water reabsorbed was independent of the sweat rate. The amount of water reabsorbed is proportional to the osmotic pressure difference between blood and sweat multiplied by the sweat rate.

72. Bush, I. E. and Willoughby, M.
Excretion of allotetrahydrocortisol in human urine. BIOCHEM. J. 67:689–700 (1957).

A reducing substance, suspected to be allotetrahydrocortisol [I], was found on chromatograms of several hundred urine extracts with an Rf value just greater than that of 3a:11β:17a:21-tetrahydroxy-5β-pregan-20-one[II]. After careful oxidation, and acetylation, the following derivatives were identified on chromatograms: the diacetate of I, the diacetate and 3-acetate of 11-dehydro-(I), 3a:11β-dihydroxy-5a-androstan-17-one

and its acetate, 3a-hydroxy-5a-androstan-11:17-dione, 5a-androstan-3:11:17-trione. The spectra in H_2SO_4 of I, II, and the urinary material were identical. In 14 normal subjects excretion rates were measured and the means were I, 0.8, II 2.0, 11-dehydro- (II) 3.4 mg./24 hr. respectively. Similar proportions were found in various cases of hyperadrenalism but slight alterations in the proportions occurred during treatment with cortisone and ACTH. I appears to be a normal metabolie of hydrocortisone in man, and its discovery modifies some of the conclusions of Dorfman on the reduction of steroid 4-en-3-ones in man.

73. Bulter, E. J. and Newman, G. E.
Urinary excretion of copper and its concentration in the blood of normal human adults. J. CLIN. PATH. 9:157–161 (1956).

Methods by which contamination of specimens can be avoided are discussed. The normal blood levels were found to be 66.2–84.9 μg. per ml. and the 24 hr. urine value 3.9–29.6 μg. per 24 hr.

74. Butt, W. R., Kornel, L. and Morris, R.
Comparison of routine methods of determining 17-hydroxy-corticosteroids in urine. ACTA ENDOCR. (Copenhagen) 26:65–74 (1957). (In English)

There was good agreement between the rises in urinary output of Porter-Silber chromogens, 17-oxogenic steroids, and 17-hydroxycorticosteroids determined by standard and modified methods in 5 patients treated with ACTH.

75. Butt, W. R. and Round, B. P.
Use of ion-exchange materials in preparation of gonadotrophins from urine. J. ENDOCRINOL. 17:75–80 (1958).

Gonadotrophins were extracted from urine by absorption on kaolin and their behavior on ion exchange materials examined. Anionic resins in a borate form, and diethyl-aminoethyl cellulose removed inactive material from these extracts with no loss of gonadotrophic activity. It is recommended that these methods be introduced into the routine kaolin extraction procedure instead of the method employing tricalcium phosphate, the use of which may cause losses of active material.

76. Butt, W. R., Crooke, A. C. and Cunningham, F. J. New method for extraction of gonadotrophins from urine. ACTA ENDOCR. (Copenhagen) 30:378-386 (1959).

Assays were performed for total gonadotrophins and FSH after benzoic acid-tungstic acid urinary extraction methods. Approximately 1.5 times as much material could be extracted. The potency was increased but no contaminating oestrogens could be detected. Results for 24 hr. excretion in terms of human menopausal gonadotrophin 20A are reported for both male and female subjects.

77. Cahill, G. F., Jr., Pawan, G. L. and Chalmers, T. M. The effects of fat-mobilizing extract from human urine on metabolism of glucose in rat adipose tissue. ENDOCRINOLOGY 69:648-651, Sep 1961.

78. Carnazzo, A. On the reactions to ambient hyperthermia. IV. Behavior of urinary 17-ketosteroids and total corticoids in subjects exposed to hyperthermic trauma. (Sulle reazioni all'ipertermia ambientale. IV. Comportamento dei 17-chetosteroidi e dei corticoidi totali urinari in soggetti sottoposti a trauma ipertermio.) - BOLLETINO DELLA SOCIETA ITALIANA DI BIOLOGIA SPERIMENTALE (Napoli) 29:1554-1556 Jul-Aug 1953. (In Italian)

Urinary levels of 17-ketosteroids in 8 subjects exposed to heat (43°-45°C.) were determined at 24 and 48 hours following exposure and found to be not significantly altered. Under the same conditions, 5 subjects exhibited an increased level of total urinary corticoids. This increase occurred 24 hours after exposure and the levels returned to normal shortly thereafter.

79. Castellanos, H. and Sturgis, S. H.
Cytology of human urinary sediment: diagnostic value of the non-nucleated cell. J. CLIN. ENDOCR. 18:1369–1383 (1958).

Among the cells seen in a sediment of urine, a non-nucleated, acidophilic, amorphous structure is normally present to the extent of 1–20 percent. Striking variations in numbers are consistently observed in several pathological conditions. They appear in great numbers in ovarian dysgenesis and after therapeutic oophorectomy, indicating that their presence is an index of ovarian deficiency. In the absence of functioning ovaries the adrenals produce an estrongenic substance capable of supporting partial development of the urethral ephithelium. Without this support, the urethral cells are shed in a semi-degenerate state, without nuclei, but they do not revert to the wholly atrophic condition that is seen when the adrenal is also inactivated. The changes in the level of the non-nucleated cells represent a significant compensatory mechanism of the adrenal in ovarian-deficient states.

80. Cathcart, E. S. and Williams, I. T. D.
The effect of the head-down position on the excretion of certain urinary constituents. CLIN. SCI. (London) 14:121–124 (1955).

No significant changes in the excretion of water, chloride, total mols, or creatinine were observed in 6 of 7 subjects tilted in a 12° head-down position during a period in the diurnal rhythm when urinary volume was stable or decreasing. It is considered unlikely that changes in venous pressure in the kidneys or head are responsible for these changes in salt and water excretion.

81. Cavalca, L. and Randazzo, A.
Urinary excretion of catecholamines in normal subjects and those with liver diseases. ATTI. SOC. LOMBARDA SCI. MED. BIOL. 12:174–179 (1957). (In Italian)

82. Cavina, G. and Tentori, L.
Electrophoretic and chromatographic separation of urinary conjugated 17-ketosteriods soluble in n-butanol. CLIN. CHIM. ACTA 3:160–164 (1958).

The 17-KS are finally fractionated in two zones corresponding to sulphates and glucuronides respectively.

83. Chalmers, T. M., Kekwick, A. and Pawan, G. L. S.
Fat-mobilizing activity of human urine. LANCET i:866–869 (1958).

A substance is present in the urine of healthy people who have been fasting, which, on injection into mice, increases the total amount of fat in the liver, mobilizes fat from the fat depots, appearts to increase the total metabolic turnover of fat in the animals, and causes weight loss without depressing appetite when given over a period of time, the loss being in the form of body-fat and water. The active material has been partially purified by paper chromatography. This substance cannot be detected in the urine of non-fasting subjects.

84. Chalmers, T. M., Pawan, G. L. and Kekwick, A.
Fat-mobilizing and ketogenic activity of urine extracts: relation to corticotrophin and growth hormone. LANCET 2:6–9, 2 Jul 1960.

85. Chamblin, A., Jr.
EVALUATION OF TESTS FOR URINARY PHENOTHIAZINES AND BILIRUBINURIA. Letterman Army Hospital, San Francisco, Calif. Final rept. on Clinical Investigation. Rept. no. LAH R-101, 1 Aug–1 Oct 1958, 3p. ASTIA AD-219 573.

Hammarsten and alcohol-iodine tests for bile in the urine and the Forrest test for phenothiazines in urine were performed on 32 urines. The Forrest test is positive on urines of all patients receiving more than 75 mg. of phenothiazine therapy, doubtful as

dosages of 40–75 mg. and negative in dosages less than 40 mg. The alcohol-iodine test is negative in patients receiving phenothiazine and therefore constitutes an adequate screening method for patients developing jaundice as a complication of phenothiazine therapy. This test is technically less difficult than serum bilirubins. In addition, it is technically less difficult than the Hammarsten test and is equally adequate.

86. Chase, A. M. and Krotkov, M. S.
Inactivation of invertase by urea. J. CELL. COMP. PHYSIOL. 47:305–316 (1956).

Two different commercial preparations of yeast invertase suffered immediate and reversible inactivation by urea at pH 4.6 and 26°. Concentrations for 50 percent inactivation was 0.6M compared with previously reported 1.5M for Cypridina luciferase. Urea concentration was < required to affect physical properties.

87. Chu, T. C. and Chu, E. Ju-Hiva
Colorimetric method for determination of urinary porphyrins. ANALYT. CHEM. 30:1678–1680 (1958).

Porphyrins are esterified with methanol-H_2SO_4 solution, the esters separated on a Hyflo Super-Cell column and determined by optical density at 500 mμ. Calibration data for esters of coproporphyrin I and uroporphyrin I are given.

88. Claeys, A. and Demeester, G.
Determination of urinary corticoids by phenylhydrazine-hydrochloric acid reagent. ANN. ENDOCR. (Paris) 18:792–797 (1957).
(In French)

Using the reagents according to Rivoire's method for the determination of 17-OHCS a linear relationship between the optical density of butyl tetrahydrocortisone and pure cortisone was obtained; the absorption curves for butyl extracts of urine and standard solution were similar; 17-OHCS values were considerably higher than those obtained with the Porter and Silber reagents.

89. Claeys, E.
Estimation of urinary 17-OHCS by method of Reddy Jenkins and Thorn. ANN. ENDOCR. (Paris) 18:354–365 (1957). (In French)

Direct estimations done without previous evaporation give false results unless the acid blanks and Porter-Silber blanks are equal. Large quantities of n-butanol are required for the purification procedure of Longwell, and if not available, it is advisable to use the evaporation technique of Forsham which is independent of degree of purity of attraction solvent. The presence of a typical urinary pigments which interfere with colorimetric readings make it important to avoid further errors due to extraction solvents.

90. Clarke, J. T., Eliane, and Shwachman, H.
Components of sweat. Cystric fibrosis of the pancreas compared with controls. AMER. J. DIS. CHILD. 101:490–500, Apr 1961.

91. Clarke, S. H.
Investigation into methods of collection of urine for culture from men and women. BRIT. MED. J. 5211:1491–1493, 19 Nov 1960.

92. Clotten, R. and Clotten, A.
High voltage paper-electrophoretic determination of xanthurenic acid in urine. Z. GES. EXP. MED. 131:379–395 (1959). (In German)

A method is described for the determination in urine of xanthurenic acid (4, 8-dihydro-oxyquinoline-2-carbonic acid). The acid is separated electrophoretically and stained specifically by application of a $FeNH_4(SO_4)_2$ solution. After elution at pH 7.8, the concentration of the Fe complex is determined at 620 mμ. Determination of xanthurenic acid is of value in clinical conditions associated with vitamin B_6 deficiency when excretion is increased probably as the result of an abnormal trytophan metabolism.

93. Cohen, S. and Kaluszyner, A.
Color reaction between 17-ketosteroids and 3 : 5-dinitrobenzoic acid. ANALYT. CHEM. 29:161–164 (1957).

3 : 5-Dinitrobenzoic acid is proposed as a colorimetric reagent for determination of 17-ketosteroids in urine. The reagent does not, under proper conditions, react with nonketonic fractions. Interference from urinary chromogens is negligible at 550 mμ, the wavelength of maximum absorption. For urine extracts the method gives results 18 percent lower than the Nathanson-Wilson method and 8 percent higher than the Callow method.

94. Colacicco, G. and Dawson, C. R.
The autolysis of trypsin in the presence of urea. BIOCHIM. BIOPHYS. ACTA 34:588–589, Aug 1959.

95. Collins, K. J.
Composition of palmar and forearm sweat. J. APPL. PHYSIOL. 17:99–102, Jan 1962.

96. Coulthard, A. J. and Waugh, D. A.
Progress in rapid (chromatographic) identification of urinary sugars. CLIN. CHIM. ACTA 2:348–350 (1957).

97. Courtois, J. R., et al.
Microbiological estimation of mesoinositol in human urine. BULL. SOC. CHIM. BIOL. (Paris) 38:1017–1023 (1956). (In French)

Urine is directly treated with ion exchange resin and the subsequent eluate used for assay with Neurospora crassa. Permutit 50 over which the urine is first passed is washed with distilled water the eluate and washings neutralized with NH_4OH and concentrated by evaporation. After filtration of this first extract to remove ammonium ureate crystals formed on cooling, the solution is passed over Deacidite 300, the column is washed with water again and the total eluate again evaporated to dryness. Microbiological assay is carried out by the method of W. Schopfer, et al., Rev. Int. Vitaminol., 1948, 20, 121. Normal subjects of different sexes and ages on a normal diet excreted 12 – 56 mg. mesoinositol/1. of urine.

98. Cox, R. I.
Separation and quantitative estimation of pregane-3a:17a20A-triol-11-one, and other urinary acetaldehydogenic steroids. J. BIOL. CHEM. 234:1693–1697 (1959).

A paper chromatographic method is described for the determination of the above compounds. The steroids, all of which contain a propyleneglycol type of side chain, are oxidized by periodic acid and the acetaldehyde formed is determined by a specific color reaction.

99. Crawford, T. B. B. and Law, W.
Method for estimation of adrenaline and noradrenaline in urine. J. PHARM. (London) 10:179–188 (1958).

The amines are absorbed on Amberlite IRC-50, eluted with acid and estimated by a fluorimetric method. Recoveries of 82 percent ± 6 percent were obtained in 51 experiments in which the amines (3–5,000 μg.) were added to urine.

100. Crepy, O., Meslin, F. and Jayle, M. F.
Estimation of urinary pregnandiol. BULL. SOC. CHIM. BIOL. (Paris) 38:505–534 (1956). (In French)

A method for rapid estimation on small amounts of urine (100 ml.) is described. Pregnandiol glycuronide hydrolysis with Helix pomatia juice glycuronidase, followed by alcohol-ether extraction gives an extract with comparatively few impurities. Precipitation by the Astwood and Jones process (J. Biol. Chem., 1941, 137, 397) elimnates the greater part of these. Application of Allen's correcting equation to Talbot's colorimetric reaction (ibid., 1943, 151, 607) makes is possible to increase the specificity of the measurement for pregnandiol. From the ration of corrected readings/actual readings it is possible to ascertain the purity of the Talbot precipitate. When the ratio is 0.9 : 1 the pregnandiol is almost pure. Ratio of 0.8 : 0.9 the purity is satisfactory and below this the purity is not great and the measurement is only of qualitative value. Recovery of pregnandiol added to urine is approximately 80–90 percent.

101. Crepy, O., Jayle, M. F. and Meslin, F. Quantitative separation by chromatography on alumina of urinary phenolsteroids sulphates and glucur-onides. C. R. SOC. BIOL. (Paris) 151:322-324 (1957). (In French)

102. Crosby, W. H. and Furth, F. W. Modification of benzidine method for measurement of Hb in plasma and urine. BLOOD 11:380-383 (1956).

103. Custance, C. and Laflame, R. A NEW TECHNIQUE FOR THE CONTINUOUS MEASUREMENT AND AUTOMATIC RECORDING OF SWEATING RATES, PART II. Defense Research Chemical Labs. (Canada). DRCL rept. no. 359, Nov 1961, 20p. (Proj. D52-82-30-12). ASTIA AD-269 966.

Questions related to the validity and practical usefulness of sweating rate curves using the technique of measurement described in this report are considered. Some important refinements of the instrument, including a greatly improved humidity sensing element, and more exact methods of monitoring the system are described. A new formula for evaluating clothing heat load is proposed. This formula has been derived from the results of a number of tests using a single subject and a graded series of clothing systems (gym shorts, socks and shoes; Army trousers, socks and boots, but no shirt: battle dress: battle dress and coveralls over). The wet bulb temperature is correlated with the sweating mean level for each run, the two measurements being the variables.

104. Darke, S. J. The cutaneous loss of nitrogen compounds in African adults. BRIT. J. NUTR. 14:115-119 (1960).

105. Day and night excretion rates. NUTR. REV. 20:13–15, Jan 1962.

106. Diao, E. K. and Johnston, F. A. Faecal residue from normal diet of known composition. GASTROENTEROLOGY 33:605–608 (1957).

Feces dry weight is determined over 112 days in respect of 9 young women on a constant diet. The range of expulsion time is 26-3/4 to 36-1/2 hr. in 6 subjects with feces of normal consistency. In 3 of the 9 subjects, feces dry weight is significantly increased during the menstrual period.

107. Dickman, S. R., White, L. H. and Mason, J. O. Purification of human urine ribonuclease. ARCH. BIOCHEM. 74:476–477 (1958).

108. Diczfalusy, E. Chemical determination of oestrogens in urine. ACTA ENDOCR. (Copenhagen) 24(31):11–26 (1957). (In English)

Isolations studies as well as experiments using radioactive oestradiol-17β administered to human volunteers indicate that in addition to the previously known oestrogens, other metabolites of the principal oestrogen are also present in human urine. Six or perhaps seven oestrogens were detected in human urine, but no method yet exists for their separate determination. The methods available for oestrogen determination are discussed critically.

109. Di Ferrante, N. and Rich, C. Mucopolysaccharide of normal human urine. CLIN. CHIM. ACTA 1:519–524 (1956).

Acid mucopolysaccharide, precipitated from normal human urine by cetyltrimethylammonium bromide was purified after digestion with trypsin and papain to yield a homogeneous material. In composition and properties the urinary mucopolysaccharide was identical with chondroitin-sulphate from bovine nasal septa.

110. Dikstein, S. and Bergmann, F.
Determination of xanthines and uric acids in urine. J. BIOL. CHEM. 230:203–211 (1958)

The purines are absorbed on a cation exchange resin, such as Dowex 50, which has been loaded with Hg. The purines and Hg are then eluted with 3 N Cl and after removal of Hg as HgS the purines are determined by paper chromatography as described for their determination in plasma.

111. DiPerri, T., Ravenni, G. and Rubegni, M.
Aldosterone in urine. G. BIOCHIM.
7:101–114 (1958). (In English)

A method for the determination of aldosterone in urine is described. Urinary extracts are prepared by extraction with $CHCl_3$ and purified in 2 paper chromatography systems. The reaction of eluted aldosterone with Tetrazolium Blue gives a colored compound which is estimated spectrophotometrically.

112. Dirscherl, W. and Schmidtmann, W.
Isolation of vanillic acid from human urine.
NATURWISSENSCHAFTEN 46:329 (1959).
(In German)

113. Dobson, L.
FURTHER STUDIES ON THE HUMAN ECCRINE SWEAT GLAND. North Caroline U. School of Medicine, Chapel Hill. Progress rept., 1 Jul 1958–31 Mar 1961, 1v. (Contract DA 49-007-md-977). 31 Mar 1961.
ASTIA AD-253 118.

As a result of profuse sweating, marked morphologic changes occur in the human eccrine sweat gland. These changes are dependent on salt intake and probably related to the process of acclimatization. Salt intake does not affect the sweat rate nor the rate of excretion of potassium or urea in sweat. The rate of sodium excretion in sweat is increased in salt-loaded subjects. The mechanism of sweat gland fatigue is still unexplained but is unrelated to morphologic changes in the eccrine gland, to poral occlusion or to neurohumoral block. The structure and function of the sweat gland in systemic diseases especially cystic fibrosis of the pancreas and hypothyroidism is being investigated.

114. Dodgson, K. S. and Spencer, B. Occurrence of arylsulphatases A and B in human urine. CLIN. CHIM. ACTA 1:478–480 (1956). (In English)

Two arylsulphatases were shown to be present in normal cell-free urine after paper electrophoresis of the urinary protein concentrate on paper which has been treated with cetylpyridinium bromide. The electrophoretic mobilities of the 2 enzymes were identical with those of arylsulphatases A and B from human liver and other tissues.

115. Dodgson, K. S. and Spencer, B. Sulphatases. XV. Arylsulphatases of human serum and urine. BIOCHEM. J. 65:668–673 (1957).

Human serum and urine have little arylsulphatase activity towards K p-acetylphenyl- and K p-nitrophenyl-sulphate. The activity which urine sometimes shows is due to cellular debris and bacteria. Both serum and urine exhibit appreciable arylsulphatase activity towards nitro-catechol sulphate. This activity is only partly due to cellular debris. Two enzymes, which correspond to arylsulphatases A and B of human tissues are responsible for most of the activity of urine.

116. Doe, R. P., Flink, E. B. and Goodsell, M. G. Relationship of diurnal variation in 17-hydroxycorticosteroid levels in blood and urine to eosinophils and electrolyte excretion. J. CLIN. ENDOCR. 16:196–206 (1956).

A diurnal variation was found in the eosinophil count, in the level of plasma 17-hydroxycorticoids and in urinary 17-hydroxycorticoid, Na, and K variations in the plasma 17-hydroxycorticoid levels. Urinary K excretion was closely correlated with 17-hydroxycorticosteroid excretion. Urinary Na excretion was not closely correlated with any of these variables in individual subjects, although it followed the same trend as K excretion when group figures were used.

117. Donath, W. F.
Simple portable apparatus for the semi-quantitative determination of the coproporphyrin content in urine. ARHIV. HIG. RADA 7:77-84 (1956).

A simple portable instrument for rapid semi-quantitative determination of urinary coproporphyrin is described. The instrument is suitable for use in screening an industrial population exposed to Pb. The method is essentially the comparison of the fluorescence of the porphyrin as developed in ether and glacial acetic acid, with that of a series of paper strips of graded degree of fluorescence. Technique and reliability are discussed.

118. Doyle, A. E. and Merrill, J. M.
Influence of posture on renal function in heart failure. CLIN. SCI. 16:155-162 (1957).

The renal function changes in 18 patients stated to be in heart failure, were qualitatively similar to those previously reported in normals when tilted to the passive erect posture. Excretion of K, but not of Na, closely follows postural glomerular filtration rate [GFR] changes; changes in water excretion closely follow the GFR and renal plasma flow, but not the filtration fraction. There was no correlation between the rate of Na excretion and the level of GFR in these experiments.

119. Dresel, E. I. B., Rimington, C. and Tooth, B. E.
Determination of urinary uroporphyrin by a direct extraction method. SCAND. J. CLIN. LAB. INVEST. 8:73-78. (In English)

Technique and levels of recovery are given.

120. Drujan, B. D., et al.
Differential determination of catecholamines in urine. CANAD. J. BIOCHEM. 37:1153-1159 (1959).

Details of uniform procedures for routine determination of adrenaline, noradrenaline and dopamine in urine are given. Normal values for 24 hr. excretions were: adrenaline, 16.4 μg. ± 1.1; noradrenaline, 54.9 μg. ± 3.2; dopamine, 198.8 μg. ± 36.2.

121. Dubovsky, J.
[Acidity test. I. Titrable acidity of urine]
SBORN LEK. 62:123-128, May 1960.
(In Czechoslovakian)

122. Dubovsky, J.
[Acidity test. II. A method for the acidity test] SBORN LEK. 62:128-134, May 1960.
(In Czechoslovakian)

123. Dubowski, K. M.
Some practical simplifications of perspiration electrolyte analysis ("sweat test"). CLIN. CHEM. 7:474-503, Oct 1961.

124. Dulce, H. J. and Hoppe-Seyler, Z.
Effects of salts and hydrophilic colloids on oxalate precipitation from normal urine.
PHYSIOL. CHEM. 311:197-200 (1958).
(In German)

125. Dulce, H. J. and Hoppe-Seyler, Z.
Effect of urinary salts on oxalate precipitation.
PHYSIOL. CHEM. 311:191-196 (1958).
(In German)

Salts interfere with Ca oxalate precipitation at concentrations in the normal urinary range. Urea, uronic acids and glucose have no effect.

126. Duner, H. and Pernow, B.
Urinary excretion of histamine in healthy human subjects. SCAND. J. CLIN. LAB. INVEST. 8:296-303 (1956). (In English)

Estimations of 25 samples from 17 subjects have produced values for free and conjugated histamine by day and by night.

127. Duner, H. and Pernow, B.
Determination of histamine in blood and urine by absorption on aberlite IRC-50. SCAND. J. CLIN. LAB. INVEST. 10:233-240 (1958). (In English)

Use of the techniques is described and normal resting values are given for blood, After oral promethazine the excretion of histamine in the urine was unchanged.

128. Duner, H. and Pernow, B.
Correlation between the occurrence of histamine in blood and urine. SCAN. J. CLIN. LAB. INVEST. 10:390-393 (1958). (In English)

When the free histamine excreted/24 hr. in the urine was plotted against the blood histamine level in 19 cases, the points lay about a straight line coefficient of correlation = 0.88).

129. Duner, H., Liljedahl, S. O. and Pernow, B.
Does urinary excretion of imidazole acetic acid [IMAA] reflect endogenous histamine metabolism in man? ACTA PHYSIOL. SCAN. 51:41-46 (1961). (In English)

The urinary excretion of histamine, histadine and IMAA was studied in healthy and severely burned patients. IMAA is a normal constituent of human urine. In the cases of burn, the IMAA excretion was normal and the histamine excretion was increased. Administration of histamine and histidine gave a slight increase in the excretion of IMAA.

130. Du Toit, H.
STUDY OF CHEMICAL METHODS FOR QUANTITATIVE MEASUREMENTS OF CATECHOL AMINES. Massachusetts General Hospital, Boston. Rept. on Biophysics of Acceleration. WADC Technical rept. no. 59-175, Apr 1959, 12p. (Contract AF 33(616)5003). ASTIA AD-220 081.

A method for the estimation of adrenaline and noradrenaline in urine is presented. This method employs an ion exchange resin, Amberlite XE-64, for purification. The simultaneous estimation of the two hormones is accomplished by a multiple filter technique of fluorometry. The selection of appropriate sets of filters is based on a careful study of the fluorescence spectra of the compounds concerned. The method has been subjected to careful scrutiny as to factors affecting reproducibility and precision of the measurements. Evidence is presented that a high degree of specificity has been attained.

131. Dyrenfurth, I. and Venning, E. H.
Preparation of urinary extracts for aldosterone assay: hydrolysis and extraction.
ENDOCRINOLOGY 60:136–143 (1957).

The conditions of hydrolysis for the maximum recovery of aldosterone from urines have been studied. Mild acid hydrolysis was usually far more effective than β-glucuronidase hydrolysis. The degree of completeness appeared to be a function of time, temperature and the pH at which the urine was allowed to stand. At room temperature, the recovery was maximum at pH 1.5. Some destruction of the aldosterone occurred in the acid medium. The application of continuous extraction simultaneously with the acid hydrolysis led to higher yields.

132. Eberlein, W. R. and Bongiovanni, A. M.
Paper chromatographic method for measurement of pregnanediol in urine. J. CLIN. ENDOCR. 18:300–309 (1958).

A new method is described for the assay of urinary pregnanediol, employing enzymic hydrolysis of pregnanediol glucuronide, ascending paper chromatography, and spectrophotometry. Analysis of absorption spectra, recovery experiments, and replicate assays of urine for pregnanediol establish the sensitivity, specificity and reliability of the method, which was also shown to reflect changing ovarian function during the menstrual cycle.

130. Du Toit, H.
STUDY OF CHEMICAL METHODS FOR QUANTITATIVE MEASUREMENTS OF CATECHOL AMINES. Massachusetts General Hospital, Boston. Rept. on Biophysics of Acceleration. WADC Technical rept. no. 59-175, Apr 1959, 12p. (Contract AF 33(616)5003). ASTIA AD-220 081.

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138. Ellenbogen, L. and Williams, W. L. Improved urinary excretion test for assay of intrinsic factor. II. Sensitive counting technique. PROC. SOC. EXP. BIOL., N. Y. 91:617–619 (1956).

139. Elmadjian, F., Lamson, E. T. and Neri, R. I. Nature of adrenaline and noradrenaline in normal human urine. II. Excretion of adrenaline and noradrenaline in human subjects. J. CLIN. ENDOCR. 16:216–221, 222–234 (1956).

I. In addition to acid hydrolysis, the urine was incubated with β-glucuronidase and with Mylase P as a source of phenolsulphatase. With acid hydrolysis, the highest values of noradrenaline [NA] were obtained by boiling for 5 min. at pH 1.5. Definite loss of NA and adrenaline activity was observed after boiling for periods of 15–30 min. NA is conjugated to the extent of 60 percent whereas adrenaline is in all probability in the free state. The conjugate of NA in normal urine appears to be the glucuronide and not the SO.

II. Excretions of adrenaline and NA were determined in sleep and waking states, after adrenaline or NA infusion into an adrenalectomised subject, after psychomotor stress and after ACTH administration. Both adrenaline and NA are excreted to a greater extent during sleep. The values after infusion are given. The effects of psychomotor stress were variable, but both adrenaline and NA excretions were increased. ACTH produced a decrease in the excretion of NA but no change in adrenaline excretion.

140. Engel, L. L., Alexander, J. and Wheeler, M. Urinary metabolites of administered 19-nortestosterone. J. BIOL. CHEM. 231:159–164 (1958).

Two new 17-oxosteroids, 19-norandrosterone and 19-noraetiocholan-3-ol-17-one are isolated from the urine of a postmentapausal woman with breast cancer after i.m. injection of 19-nortestosterone. The increased excretion of oestrone after the injection of 19-nortestosterone is of the same order of magnitude as after administration of testosterone.

141. Epstein, F. H., Kleeman, C. R. and Hendrikx, A. Influence of bodily hydration on renal concentrating process. J. CLIN. INVEST. 36:629–634 (1957).

Normal young men were subjected to different degrees of hydration over a period of 3 days. Water deprivation increased, and forced drinking decreased, the maximum urinary concentration achieved after injections of pitressin.

142. Epstein, F. H., et al. Feeding protein and urea on the renal concentrating process. J. CLIN. INVEST. 36:635–641 (1957).

The response to pitressin was measured in normal young men maintained on low and high protein diets for 3 days, and on men fed with urea. Feeding of protein or urea increased the renal response to pitressin in both normally and over-hydrated subjects.

143. Erdmann-Ochlecker, S. and Heinrich, H. C. Microbiological determination of vitamin B_{12} in in haemoblastosis. I. Vitamin B_{12} levels in serum and urine. CLIN. CHIM. ACTA 1:269–286 (1956). (In German)

The phytoflagellate Euglena gracilis var. saccharophila isol. T and chrysomonad Ochromonas malhamensis Pringsheim were used in the microbiological determination of vitamin B_{12} in serum and urine. In chronic myeloid leukaemia the B_{12} concentrations were 510–11,900 $\mu\mu$g./ml., 2–50 times the normal values. In infectious leucocytosis the serum vitamin B_{12} values were in the lower region of normal. After X-ray irradiation of the spleen in chronic myeloid leukaemia the vitamin B_{12} level is much lower in the remission which follows the drop in leucocytes. With recurrence of the disease the serum vitamin B_{12} again rises. Greatly increased vitamin B_{12} levels were also found in acute leukaemia and polycythaemia. This rise is not seen in chronic lymphatic leukaemia.

144. Esipenko, B. E. and Laremenko, M. S. Use of refractometric methods in determining the quantity of dry residues of saliva, bile and urine. FIZIO. ZH. (Kiev) 7:708–709, Sep–Oct 1961. (In Ukrainian)

145. Faarvang, H. J.
Excretion of trypsin inhibitor in urine of normal persons. ACTA ENDOCR. (Copenhagen) 30:285–295 (1959). (In English)

The estimation, and properties, of the trypsin inhibitor are described. There is individual variation in its excretion, but a given individual excretes a level which is fairly constant for long periods. There is a diurnal rhythm which follows closely the rhythm of excretion of 17-KS. Factors other than adrenal cortical function may influence the excretion of the inhibitor in the urine.

146. Faarvang, H. J. and Knudsen, P. J.
Hyaluronidase inhibitor and trypsin inhibitor in preparations from human urine. PROC. SOC. EXP. BIOL. MED. 108:591–592, Dec 1961.

147. Falet, R.
[A contribution to the study of the Donaggio reaction: a description of a micro-method]
CONTRIBUTION A L'ÉTUDE DE LA RÉACTION DE DONAGGIO; DESCRIPTION D'UNE MICRO-MÉTHODE. – MÉDECINE AÉRONAUTIQUE (Paris) 9:153–161 (1954) (In French)

The work of a number of investigators concerned with the mechanism of the Donaggio reaction (precipitation of thionine in the presence of ammonium molybdate in the urine) is reviewed. A fairly simple micro-method is described which can be manipulated with facility and speed to determine the degree of fatigue. The method lends itself well for determining fatigue in flyers.

148. Fat mobilizing and ketogenic substances in urine. NUTR. REV. 19:39–41, Feb 1961.

149. Feller, P.
MODIFICATION OF THE TRIHYDROXYINDOLE METHOD FOR THE ESTIMATION OF EPINEPHRINE AND NOREPINEPHRINE IN URINE. School of Aviation Medicine, Brooks Air Force Base, Texas. Rept. no. 60-71, Aug 1960, 7p. ASTIA AD-250 043.

A procedure developed from existing technics for the estimation of epinephrine and norepinephrine in urine has been described. The precision of the method, based on the average difference between twenty-eight sets of duplicate determinations, indicated a coefficient of variation of 8.0 percent (S.D., .058) for epinephrine and a coefficient of variation of 9.1 percent (S.D., 148) for norepinephrine. Essentially, quantitative recoveries resulted from the addition of a mixture of known amounts of epinephrine and norepinephrine to urine. In a series of 45 normal subjects, a mean of 1.5 (S.D., .82; range 0.1 to 3.7) and 0.6 (S.D., 28; range 0.2 to 1.4) gamma per hour was found for norepinephrine and epinephrine, respectively.

150. Finkelstein, M. and Cox, R. I.
Method for simultaneous estimation of pregnane-3α : 17α : 20α-ril and pregnane-3α : 17α : 20α-triol-11-one in urine. PROC. SOC. EXP. BIOL., N. Y. 95:297–300 (1957).

These compounds are liberated from their conjugates by β-glucuronidase, hydrolysed and extracted from urine and then distinguished and estimated by paper chromatography and by the fluorescence colors which they develop on heating the paper strips moistened with 70 percent phosphoric acid for 10 min. at 87°. Increased excretion of pregnane-3α : 17α : 20α-triol was found in patients with adrenal hyperplasia and with adrenal tumors. Pregnane 3α : 17α : 20α-triol-11-one was only detected in urine from patients with adrenal hyperplasia.

151. Fischl, J. and Pinto, N.
Rapid spot tests for routine urine analysis. CLIN. CHIM. ACTA 2:527–533 (1957).

Details of methods for performing routine urine analysis by spot tests are given for albumin, urobilinogen, glucose, bilirubin, acetone, and nitrate. Some of the tests can be used semi-quantitative. They are claimed to be quicker, cheaper, and just as accurate as more laborious methods.

152. Fischl, J. and Segal, S.
Performance of the 'sweat test' under standardized conditions. CLIN. CHIM. ACTA 3:471–475 (1958).

Cellulose sponge was used to collect the sweat; evaporation of sweat was minimised; elution was carried out in a fixed elution 1:100, so that the electrolyte concentration fell within a narrow range. A simple chemical method for Cl determination in a laboratory not equipped with a flame photometer is presented. Full experimental details are given.

153. Fiser-Herman, M. and Petrovacki, M.
Reducing substances from alcaptonuric urine. CLIN. CHIM. ACTA 3:248–252 (1958). (In German)

Two other reducing substances besides homogentisic acid have been found in alkaptonuric urine. They were identified as the lactone and ethyl ester of homogentisic acid. These substances were extracted from normal urine and demonstrated by chromatography.

154. Flaschenträger, B., Seddik, Y. and Twefik, H.
Metal filter for the filtration of particles greater than 42μ from water and urine. NATURWISSENSCHAFTEN 44:234 (1957). (In German)

155. Floyer, M. A.
Simple biological test for catechol-amines in urine. LANCET ii:1154–1155 (1958).

An approximate estimation of urinary catechol amines can be made by measuring the rise in blood pressure after direct i.v. injection of urine into an anaesthetised rat.

156. Foss, J. G. and Schellman, J. A.
Thermal transition of RNase in urea solutions.
J. PHYS. CHEM. 63:2007–2012 (1959).

Measurements of the optical rotation were used to study the process of denaturation produced by a combination of urea and of heat. As the concentration of urea increases the temperature of the transition from the folded form to the denatured form is reduced. The presence of urea does not affect the temperature dependence of the rotation of the denatured form. A more detailed analysis of the results shows that the denaturation induced by urea at low temperature may be partially reversed as the temperature is raised. A simple thermodynamic theory is proposed and the free energy and entropy changes of the transition are calculated.

157. Foster, K. G.
Relation between the colligative properties and chemical composition of sweat. J. PHYSIOL. (London) 155:490–497, Mar 1961.

158. Fotherby, K., et al.
Isolation of 16α-hydroxydehydroepiandrosterone (3β : 16α-dihydroxyandrost-5-en-17-one) from the urine of normal men. BIOCHEM. J. 66:664–669 (1957).

Two "blue tetrazolium" reducing substances, X and Y, were detected by paper chromatography in $CHCl_3$ extracts of human male urine which had been boiled at neutral pH for 1 hr. : they were not detected in extracts of unboiled urine. Treatment of X by acid at room temperature converted it into the more "polar" substance Xa, which was digitonin precipitable and gave a positive Pettenkofer test and which had the same RF values as Y. Xa ($C_{18}11_{28}O_3$) m.p. 177–181° (uncorrected) : $[\alpha]_D$ + 12° (ethanol) was isolated from male urine in yields of 5–15 mg./100 l. It yielded a diacetate (m.p. 166–168° (uncorrected); $[\alpha]_D$ + 20° (ethanol), and took up 2 moles H_2 to yield 5 α-androstane-3β : 16α : 17β-triol which was identified by mixed m.p. and i.r. spectra. Xa was therefore shown to be 3β : 16α-dihydroxyandrost-5-en-17-one, and X is considered to be 6β : 16 α-dihydroxy-3 : 5-cycloandrostan-17-one formed by hydrolysis at neutral pH from the 3-sulphate of 3β : 16 α-dihydroxyandrost-5-en-17-one present in urine. Evidence that the latter is a metabolic product of dehydroepiandrosterone was obtained.

159. Fotherby, K.
Isolation of 3 β-hydroxy-Δ5-steroids from urine of normal men. BIOCHEM. J. 69:596-600 (1958).

Androst-5-ene-3β : 17β-diol, androst-5-4n4-3β : 16β : 17β-triol and pregn-5-ene-3β : 17α : 20α-triol have been isolated from the urine of normal males which has been boiled for 2 hours at neutral pH. It is suggested that these steroids are present in urine as sulphates and the analogy between the metabolism of dehydroepiandrosterone and oestrone is duscussed.

160. Fotherby, K.
Method for estimation of dehydroepiandrosterone in urine. BIOCHEM. J. 73:339-343 (1959).

The sulphate of this steroid is hydrolysed by heating urine without acidification at 100° for 6 hours.

161. Fowler, D. I., et al.
Urinary amino acid excretion in man: influence of age and diet. ARCH. BIOCHEM. BIOPHYS. 68:452-466 (1957).

Eighteen amino acids were determined in the urine of 12 young children and 2 older children by the method of Moore and Stein. A marked amino aciduria was present in premature infants and to some extent in full term infants. Taurine, glycine, and proline showed the largest changes. Four children of 1-3-1/2 months were given a synthetic diet in which the N was in the form of L-amino acids. Lysine and threonine excretion was increased and alanine and glutamic acid excretion was reduced.

162. Fox, H. M., et al.
Urinary 17-OHCS and uropepsin levels with psychological data. ARCH. INTERN. MED. 101:859-871 (1958).

The daily urinary excretion of 17-OHCS, uropepsin and creatinine of a male subject with a history of gastrointestinal haemorrhage was measured over 3 years.

163. Frahm, M., Fretwurst, E. and Soehring, K. Paper chromatographic detection of several phenothiazine derivatives in urine. KLIN. WSCHR. 34:1259–1262 (1956). (In German)

Solvent systems for the separation of phenothiazine derivatives by paper chromatography are described, together with color reactions for chlorpromazine, promethazine and N-methylpiperidyl-3-methylphenothiazine. Detection of these substances in urine after their parenteral or enteral administration is described.

164. Frank, H. and Scheiffarth, F. New method for the detection [and estimation] of inulin in plasma and urine. KLIN. WSCHR. 34:914–918 (1956). (In German)

A method is described for the estimation of inulin based on its hydrolysis by heating and the subsequent production of a blue color in the presence of phosphomolybdic acid. The conditions for estimation of inulin over the range of 5–40 mg./100 ml. are described. The reduction of phosphomolybdate by glucose is about 1/30th that of fructose and consequently the blank values in serum and urine are hardly affected. The technique may be used on a micro scale (0.2 ml. of serum).

165. Franklin, E. C. Physicochemical and immunological studies of γ-globulins of normal human urine. J. CLIN. INVEST. 38:2159–2167 (1959).

Most of the γ-globulin of normal human urine, appeared to be 1/5–1/6 the size of serum γ-globulin, had $\underline{s}$ of approximately 1.6 and was antigenically closely related to serum 7S γ-globulin. Isotopic studies indicated derivation from serum γ-globulin fraction.

166. Frantz, A. G., Katz, F. H. and Jailer, J. W. 6-beta-hydroxy-cortisol: high levels in human urine in pregnancey and toxemia. PROC. SOC. EXP. BIOL. MED. 105:41–43, Oct 1960.

167. Frantz, G., Katz, H. and Jailer, W. 6β-Hydroxycortisol and other polar corticosteroids: measurement and significance in human urine. J. CLIN. ENDOCRINOL. AND METABOLISM 21:1290–1303 (1961).

168. Franza, C. and Caturani, F. Behavior of urinary 17-hydroxy corticosteroids in late gestation. REND. ED ATTI ACCAD. SCI. MED. CHIR. 111:332–340 (1947). Pub. 1958.

169. Frascarelli, R, Lucidi, E. and Cozzali, G. The influence of diuretics of the sulfonamide type on the urinary excretion of uric acid and on the blood level of uric acid. MINERVA MED. 51:1954–1961, 26 May 1960. (In Italian)

170. Fraser, R. and Harrison, M. Effect of growth hormone on urinary calcium excretion. In: CIBA FOUNDATION COLLOQUIA ON ENDOCRINOLOGY. Human Pituitary Hormones. Ciba Foundation, 1959, v.13, p. 135–155.

171. Freeman, S., Kanabrocki, E. L. and Inman, C. W. Influence of diet and of exogenous glucuronolactone or glucuronate upon the urinary and serum glucuronic acid of adult human subjects. J. LAB. CLIN. MED. 47:583–591 (1956).

In normal subjects, glucuronic acid excretion was minimal at night; the dietary protein intake had little effect on the output. Ingestion of glucuronolactone produced a prompt increase in the serum level, but less than 20 percent was excreted in the urine even when massive doses were given. Moderate doses of Na glucuronate had no substantial effect on the serum concentration or excretion of glucuronic acid, but large doses increased the blood and urine contents. Infusion of glucuronolactone or Na or Ca glucuronate was followed by rapid urinary excretion of the substance administered, to the extent of 60–80 percent.

172. Froesch, E. R. and Renold, A. E. Specific enzymic estimation of glucose in blood and urine using glucose oxidase. SCHWEIZ. MED. WSCHR. 86:1038 (1956). (In German)

A daily excretion of 16–132 mg. of glucose in the urine of normal subjects has been found (mean 72 mg./24 hr.). Acute administration of glucocorticoids produces a small but significant rise in urinary sugar excretion.

173. Fujita, T. Determination of ACTH in human blood and urine by modified oxycellulose method. J. CLIN. ENDOCR. 17:512–518 (1957).

A simplification of the oxycellulose technique for the determination of ACTH in blood is described. In 5 out of 27 normal subjects there were detectable amounts of ACTH in 200 ml. samples of blood. The average value for the blood concentration of ACTH in normal subjects was found to be 1 milli I. U./1. The oxycellulose method was applied to urine: approximately 0.25 mill I. U. of ACTH was found per 24-hour specimen in normal subjects.

174. Fukushima, D. K. and Gallagher, T. F.
D-Homosteroids in extracts of human urine.
J. BIOL. CHEM. 220:951-956 (1956).

3α : 17 α-Dihydroxypregnane-20-one, 3α : 17a α-dihydroxy-17a α-methyl-D-homoaetiocholane-17-one, and 3α : 17 α-dihydroxy-17 βωmethyl-D-homoaetiocholane-17a-one, previously isolated from human urine, are shown to be artifacts of isolation resulting from D-homo rearrangements of 3α : 17 α-dihydroxypregnane-20-one.

175. Funck-Bretano, J. L.
Urine examination. J. UROL NEPHROL.
(Paris) 67:379-386, Jun 1961. (In French)

176. Gabriel, O., et al.
Fractionation of non-dialysable carbohydrate-protein complexes of male urine. ARCH.
BIOCHEM. 86:155-156 (1960).

177. Gaddum, J. H. and Horton, E. W.
Extraction of human urinary kinin (Substance Z) and its relation to the plasma kinins. BRIT.
J. PHARMACOL. 14:117-124 (1959).

A method for the extraction of substance Z from human urine is described. Separation of two oxytocic fractions from such extracts could not be confirmed. Substance Z could not be distinguished from kallidin, bradykinin or glass activated kinin by parallel quantitative assays, thus confirming that these 4 substances are very closely related.

178. Gaedtke, K. and Schreier, K.
Estimation of serotonin in urine. CLIN. CHIM.
ACTA 1:475-477 (1956). (In German)

A new method for estimating serotonin in urine is described. After acetylation, the paper chromatogram is developed with xanthychol, and eluted, and then estimated quantitatively.

179. Gallagher, T. F., et al.
Comparison of methods for analysis of oestrone, oestradiol, and oestriol in extracts of human urine. J. BIOL. CHEM. 233:1093–1096 (1958).

When extracts of urine from oophorectomised-adrenalectomised women who have had [16-^{14}C] oestradiol-17β injected i.v. are analysed for oestrone, oestradiol, and oestriol by the methods of (a) reverse isotopic dilution, (b) determination of the radioactivity of the peak tubes after counter-current distribution, (c) the methods of Brown (Anal. Abstr., 1955, 3161) and of Brown, et al. (J. Endocrinol., 1957, 16, 49) which utilizes the Kober color reaction, and (d) determination of the radioactivity content of the separated oestrogen methyl ether fractions obtained by the method of Beer and Gallagher (Brit. Abstr. Med. Sci., 1956, 5550), there is satisfactory agreement between all the results.

180. Gartler, S. M.
Urinary β-aminoisobutyric acid excretion in man. ARCH. BIOCHEM. 80:400–409 (1959).

Following the ingestion of 500 mg. thymine the additional urinary excretion of β-aminoisobutyric acid in 6 hours was similar in subject whose fasting urinary levels were widely different. After 50 mg. thymine, the high excretors showed a greater increase. The high excretors also showed a greater excretion of β-aminoisobutyric acid following 500 mg. dihydrothymine or 100 mg. β-ureidoisobutyric acid; both these substances were found in the urine in each case.

181. Gautier, E. and Kohli, P.
Effect of sudden changes in urine flow on excretion of urea. SCHWEITZ MED. WSCHR. 91:1636–1644, 30 Dec 1961. (In German)

182. Gerlach, J. L. and Frazier, R. G.
Spectrophotometric determination of chloride in sweat and serum with diphenylcarbazone.

Cl combines with Hg after which excess of the latter form a violet colored complex with diphenylcarbazone. The absorption maximum is 500 mμ and Beer's law is obeyed at pH 3.2 in the range 0.240 μg. Cl/100 ml.

183. Ginetsinskii, A. G., Broitman, A. I. and Ivanova, L. N.
Activity of hyaluronidase in human urine.
BIUL. EKSPER. BIOL. MED. 38:37-39 (1954). (In Russian)

The activity of the enzyme was measured in the arbitrary units derived from the viscosity changes appearing in the urine due to the depolymerisation of the added hyaluronic acid. It was found in healthy persons and in dogs that were diuresis is increased the activity decreases and completely disappears when the rate of the urine excretion reaches the level of > 0.8 ml./min./sq. m. In the initial stage of the acute glomerulonephritis the relationship between the diuresis and the enzyme activity is similar to that found in normal conditions but the concentration of enzyme per unit of urine volume is increased. It was found that 50 units of activity are present in these cases when the rate of urine excretion is about 0.2 ml./min. (against 20 units in normal conditions). Even when excretion is of 1.6 ml./min. the urine shows 20 units of activity. One to two weeks later the activity of the enzyme drops, appears again at approximately 0.2 ml./min. and increases up to a maximum activity at the rate of urine excretion of approximately 0.8 ml./min. In amyloidosis the activity of the enzyme disappears. It is suggested that the enzyme is liberated from the nephrous epithelium. Extracts of dog kidney contain more of this enzyme than the seminal vesicles.

184. Gobel, P., Heni, F. and d'Addabbo, A.
Paper chromatographic separation and quantitative determination of 17-ketosteroids in urine.
HOPPE-SEYL. Z. 311:201-212 (1958).
(In German)

A method is described suitable for routine work for the separation of androsterone, etiocholanone, dehydroepiandrosterone, 11-keto-androsterone, 11-ketoetiocholanone, 11-hydroxyandrosterone and 11-hydroxyetiocholanone. Paper chromatography with propylene glycol-acetone-methylcyclohexane is used. After development by alkaline dinitrobenzene the spots are evaluated by a scanning method.

185. Goldbarg, J. A. and Rutenburg, A. M.
Colorimetric determination of leucine aminopeptidase in urine and serum of normal subjects and patients with cancer and other diseases.
CANCER, PHILAD. 11:283-291 (1958).

A new method is described and the kinetics of the enzyme and its assay in urine and serum in normal subjects and in patients with cancer and other diseases are presented. Urinary leucine aminopeptidase activity was increased in 46 percent of cancer patients before treatment and in most patients postoperatively. After operation for non-malignant disease, enzyme activity returned to normal within 30 days, but in cancer patients the return to normality was usually retarded. Changes in activity in pregnancy, in the post-partum period and in metastatic cancer are reported.

186. Goldstein, M., Friedhoff, A. J. and Simmons, C. Method for separation and estimation of catechol amines in urine. EXPERIENTIA, BASEL 15:80–81 (1959). (In English)

187. Golub, O. J., Sobel, C. and Henry, R. J. Comparative study of 17-ketogenic (Norymberski), Glenn-Nelson and Reddy methods for determination of C21 urinary steroids. J. CLIN. ENDOCR. 18:522 (1958).

The results indicate relatively good correlation between the Norymberski and Glenn-Nelson values and the clinical findings, but serious discrepancies were obtained with the Reddy method, especially in urines containing only small amounts of corticosteroids. Utilizing 3 λ for reading with the latter procedure, although frequently altering the values, did not necessarily improve their agreement with those obtained by the other 2 methods or with the final diagnosis. Data are presented which indicate that the Glenn-Nelson technique leaves a significant percentage of the 17-OHCS in the residual urine following hydrolysis and extraction. The results indicate the advantage of the Norymberski procedure in the diagnosis of the adrenogential syndrome, a condition in which pregnanetriol is excreted in abnormal amounts and measured as a 17-ketogenic steroid.

188. Gomes, F. P. Bradykinin and a slow contraction substance in normal human urine. C.R. SOC. BIOL. (Paris) 151:812–815 (1957). (In French)

Bradykinin and a material isolatable from normal human urine appear identical in their actions on the isolated uterus of the rat. When separated by countercurrent distribution in butanol : acetic : water the two principles are shown to be different when the eluate is assayed on the uterus.

189. Gomes, F. D.
Oxytocic activity of rat and human urine.
C.R. SOC. BIOL. (Paris) 151:1476–1480
(1957). (In French)

Substances capable of contracting the uterus of the rat are extracted from rat urine and are present in 100–200 times the concentration of similar substances in human urine. The uterus shows a latent period in response to these substances that is longer than for human urine. The activity is due to a substance different from that in human urine and is thermo-stable and resistant to chymotrypsin.

190. Gontzea, I., Sutzescou, P. and Jantea, F.
Total nitrogen in human sweat. J. PHYSIOL.
(Paris) 51:861–872 (1959). (In French)

Sweat was collected in nylon sleeves for 2–8 days in 63 subjects. N was 0.08–0.15 g./l. higher in sweat from arms and thighs than from the chest. N concentration fell from 0.45 g./l. at a sweating rate of 200–300 ml./hr. to 0.36 g./l. when the rate was 400–500 ml./hr.

191. Goodman, R. and Bassett, S. H.
Renal regulation of phosphorous excretion.
J. CLIN. ENDOCR. 18:981–990 (1958).

Four male patients with apparently normal P metabolism and renal function were studied during a metabolic balance regimen and then given oral P supplements. In all cases there was an increase in the level of serum P, filtered P and urinary P. By the end of the 2nd 24-hour period, P excretion had become stabilised. Similar but opposite responses followed withdrawal of the P supplements. Tubular reabsorption and filtration rate data are given. Parathyroid hormone appears to regulate renal function in response to sustained rather than transient variations in the dietary P load.

192. Gounelle, H. and Richet, F.
Urinary excretion of pantothenic acid and effect
of test doses. C.R. SOC. BIOL. (Paris)
151:24–26 (1957). (In French)

Variations in the amounts of pantothenic acid excreted during 24-hour periods are shown to be small. The average concentration of the material is approximately 3.5–5.5μg./ml. In one case the level before a test dose of 100mg. pantothenol was 5.79 μg./ml. and

four hours after it was 181 μg./ml. while 6 hours 45 minutes after the dose it had fallen to 38.8 μg./ml. Within 12 hours the levels were back to normal. The amounts excreted after feeding were elevated by between 10−50 times the normal.

193. Gradwohl, R. B. H.
Feces. In CLINICAL LABORATORY METHODS AND DIAGNOSIS. St. Louis, Mo., C. V. Mosby Co., 1956, v.2, chapter VIII, p. 1261.

This chapter describes the compositions of stools, physical, chemical, etc.

The feces consist of the indigestible and undigested remnants of food, plus certain constituents such as material secreted by the intestinal wall, plus certain bacteria which may or may not belong to the group of normal intestinal flora. The food remnants, together with intestinal parasites and their eggs, are intimately mixed with bacteria and excretions from the intestinal mucose. Strassburger claimed feces ordinarily are one-third bacteria.

Usual amount of stool is 100 to 200 grams a day, dependent on diet, varying from 30 to 282 gms., average 102.8 gms.

On a mixed diet weighing 150 gm., individuals ought to pass 30−37 gm. fecal material. Vegetable and starchy diet increases amount while proteins decrease amount.

Stools never show more than a bare trace of chlorides.

Color of stools is due to presence of Hydrobilirubin from bile. Odor due to Indol and Skatol, from action of bacteria upon protein.

The most important products formed are: Indole ($C_6H_4NHCH{:}CH$), Skatol (C_9,H_9,N), Paracresol ($CH_3C_6H_4OH$), Para-oxyphenyl-propionic Acid, Para-oxyphenylacetic Acid, Volatile Fatty Acid, H_2S, CH_4, Methylmercaptan, H_2, CO_2, Preteoses, Peptones, Peptides, Ammonia, Amino Acids, some raw vegetables pass unchanged (radishes, cole slaw, pickles, onion, skins of fruits, nuts, berries), mucus, tissue remnants, epithelial cells, muscle fibers, connective issues, crystals, phosphates (many named), detritus, fats, neutral, free fatty acids or soaps, starch granules, bacteria, great variety normally found. Normal discharge via stools 126 billion bacteria/day. Ancretions, limey (not in normal stools)

Fresh stools are neutral, or nearly so. They consist normally of 65−85 percent watery parts and 15−35 percent dry solids.

194. Grajnert, K.
Determination of 17-ketogenic steroids in urine.
POLSK. ARCH. MED. WEWN.
29:1193–1201 (1959). (In Polish)

The method described circumvents the rather troublesome preparation of urine extracts, and is convenient in clinical use. The 17-KS content is calculated from the difference between 2 measurements performed before and after oxidation of sample with Na bismuthate. The method is a colorimetric one involving addition of m-dinitrobenzene.

195. Grande, F., Anderson, J. T. and Taylor, H. L.
Restricted water intake on urine nitrogen output
in man on low-calorie diet devoid of protein. J.
APPL. PHYSIOL. 10:430–435 (1957).

The diet contained 1000 kcal./day. N output in urine was 9.4 g./day on water intake of 900 ml./day, 7.1 g./day on 1800 ml./day, and 5.8 g./day on water. N in faeces and sweat was virtually unchanged. There was an increase in blood urea N on the 5th day of 900 ml./day water. Men receiving limited water excreted more urine water than those on a liberal intake on the day of maximum dehydration. The increased output is interpreted as a response to the stress of dehydration.

196. Grant, G. H. and Everall, P. H.
Proteins of normal urine. J. CLIN. PATH.
10:360–368 (1957).

The proteins of normal urine were concentrated by ultrafiltration and analysed by immuno-electrophoresis. Using rabbit anti-human-serum and anti-urine-colloids sera it was shown that urine contains 2 groups of proteins: (i) a group apparently identical with the plasma proteins except for β-lipoprotein and several other minor fractions; and (ii) proteins not demonstrable in blood presumably arising from the urinary tract; these included a mucoprotein described by Tamm and Horsfall (J. exp. Med., 1952, 95, 71).

197. Grant, G. H.
Proteins of normal urine. II. From urinary tract.
J. CLIN. PATH. 12:510–517 (1959).

About 12 antigenic components, not detectable in normal serum, were found in normal urines by immunochemical methods. Antisera produced in rabbits against normal male or female urine colloids, normal human semen and Tamm-Horsfall mucoprotein were used in the analysis, which was by either gel diffusion or immunoelectrophoresis. The urinary Ag were thus classified according to origin from the kidneys, ureters and bladder, from the male genital tract and from the urethra in both sexes.

198. Gray, C. H., et al.
Urinary metabolic products of prednisone and prednisolone. J. ENDOCR. 14:146–155 (1956).

The steroids excreted by patients receiving oral prednisone and prednisolone were investigated. The two compounds present in largest amounts were isolated and identified as prednisone and prednisolone. The corresponding 20 β-alcohols were present in smaller amounts. Another compound has properties suggestive of pregna-1 : 4-dien-17α : 20α : 21-triol-3 : 11-dione. There is no evidence that prednisone and prednisolone are converted in the body to cortisol, cortisone, or their derivatives, and the investigations suggest that prednisone is metabolised in part by reduction of its 11-ketone group to an 11-hydroxy group and prednisolone by oxidation of its 11-OH group to an 11-ketone group. These two components are thus metabolically interconvertible. Reduction of the 20-ketone group can occur in both compounds.

199. Gregor, O. and Kalousek, F.
Stability of uropepsin. PHYSIOL. BOHEM. 7:335–340 (1958). (In Czechoslovakian)

Proteolytic activity in urine remains stable for at least 3 days when the urine is stored at room temperature up to 14 days in a refrigerator and even for several hours in an incubator at 37°. Activation usually occurs after 1/2 hour, the maximum being reached in an hour, after which it remains constant.

200. Gries, F. A. and Gries, G.
Quantitative estimation of total bilirubine in urine. KLIN. WSCHR. 34:1084–1088 (1956). (In German)

A critical analysis of factors affecting the estimation of total urinary bilirubin by the method of With (Hoppe-Seyl. Z. physiol. Chem., 1942, 275, 166).

201. Gries, F. A. and Gries, G.
Selective quantitative determination of the direct reacting bilirubin in urine. KLIN. WSCHR. 35:81-85 (1957). (In German)

202. Gutman, A. B., Yu, T. F. and Berger, L.
Tubular secretion of urate in man.
J. CLIN. INVEST. 38:1778-1781, Oct 1959.

203. Hadfield, G. and Young, J. S.
Mammotrophic potency of human urine. BRIT.
J. CANCER 10:145-168 (1956).

The urine of pre-menopausal women contained a biological active factor which stimulated growth and glandular differentiation in rudimentary mammae of weanling (24-day-old) male mice. Groups of 10 mice were used for each test and the number of "clubs" or end-bulbs in each gland counted. The technique used is fully described with sketches of the different stages of response and the effect of oestrone, prolactin, growth hormone, and gonadotrophin compared with that of urines.

204. Hagopian, M., Dorfman, R. and Gut, M.
Isolation and separation of catecholamines and their transformation products from biological media. ANALYT. BIOCHEM. 2:387-390 (1961).

It is claimed that a simpler and more comprehensive analysis of catecholamines may be obtained by acetylating them directly in aqueous solutions before extraction and paper chromatography.

205. Hakim, A. A.
Heterogeneous nature of certain RNase.
Human urine and sperm RNase. ARCH.
BIOCHEM. 83:390–407 (1959).

Purified preparations were made of acid and alkaline RNase and of a combined RNase and its free form. Actions of these on yeast RNA and synthetic substrates are described, together withpH optima and heat stabilities. Eultion from ion exchange resin columns showed that each RNase preparation contained many enzymically active components.

206. Hakim, A. A.
Polynucleotide phosphorylase from human sperm
and urine. II. Activities on nucleotides and
nucleic acids. BIOCHEM. Z. 331:229–238
(1959). (In English)

The isolation and purification of an enzyme from human sperm and urine is described. The enzyme catalyses the synthesis of highly polymerised RNA from ribonucleotides present in yeast RNA. Homogeneous polymers containing AMP, GMP, UMP, and cytidylic acid, and various heteropolymers of the 4 mononucleotides, are obtained by incubating the urine or the sperm enzyme with the corresponding 5-nucleotide diphosphates.

207. Hakim, A. A.
Action of enzymes in presence of certain hormones.
II. Urine deoxyribonucleases. CLIN. CHIM. ACTA
4:484–493 (1959). (In English)

The starting material is lyophilised dried urine powder. DNase were found in free (active) and combined (inactive) form. They also exist as an acid DNase, optimum pH activity at 4.6 requiring Mg for activation, and as neutral DNase, optimum pH 7.17, which does not require Mg for activity. Daily and monthly variation of the free and combined enzymes paralleled the variation of urinary oestrogenic hormones.

208. Hale, B. and Ellis, P., Jr.
EXCRETION TRENDS IN MEN UNDERGOING DEACCLIMATIZATION TO HEAT. School of Aerospace Medicine, Brooks Air Force Base, Texas. Rept. no. 61-81, Jul 1961, 8p.
ASTIA AD-264 801.

The possibility that exercise or good physical condition influences the rate at which human beings deacclimatize to heat was investigated. Twenty-one men were studied over a 10-week period during which daily peak temperatures declined from 95 to 54F. (September to November). Two overnight (timed) urine specimens per subject per week were analyzed for Na, K, PO4, urea, uric acid, creatinine, and 17-hydroxy-corticosteroids. Five of the men exercised daily. 9 exercised twice each week, and 7 never exercised (exercise was defined as cross-country runs of 3 to 8 miles). Urine volume, uric acid excretion rate, the uric acid/creatinine ratio, urea excretion rate, and sodium excretion rate tended to remain at the initial (summer) level; these observations suggest that summertime adjustments are quite persistent. However, significant variation with time was found for reatinine, potassium, and 17-hydroxycorticosteroid excretion rate as well as for the urea/creatinine, phosphate/creatinine, sodium/potassium, and 17-OHCS/creatinine ratios.

209. Hamburger, C. and Johnsen, S. G.
Studies on urinary gonadotrophins. III. Qualitative differences between those of young men and postmenopausal women. ACTA ENDOCR. (Copenhagen) 26:1-29 (1957). (In English)

The gonadotrophin was extracted by a chromatographic method (Johnsen, Acta endocr., Kbh., 1955, 20, 101). The amount of dry powder so produced was the same per liter of each type of urine, but the activity per liter of the women's urine in increasing the uterine weight in immature mice was 11 times greater than that per liter of the men's urine. The luteinising activity of the extract of men's urine per unit of uterus-stimulating activity was 2-3 times great than that of the extract from the women's urine. The differences are not due to nonspecific augmentation nor to contamination with non-gonadotrophic hormones.

210. Hamilton, J. B., Bunch, L. and Hirschman, A. Serum inorganic phosphorus levels in males and females at progressive ages with concomitant measurement of urinary ketosteroids and androgens in men. J. CLIN. ENDOCR. 16:463–472 (1956).

Serum inorganic p [SIP] levels are high until sexual maturity is reached, and in young adults an inverse relationship exists between gonadal secretions and SIP values. The extent of the influence of gonadal secretions on SIP concentrations decreases with age. SIP values are not correlated with urinary titres of ketosteroids or androgens.

211. Handler, P. Pressor factor in normal human urine. AMER. J. PHYSIOL. 184:400–405 (1956).

The factor was demonstrated in partially nephrectomised rats maintained in the normotensive state by feeding a low protein, normal salt diet, and in normotensive bilaterally nephrectomised rats. Excretion of the factor depends upon adequate protein nutrition, adrenocortical and renal function. Renal hypertension may be partly due to a failure to excrete this factor. The factor was partially purified.

212. H. Hanson and Fittkau, S. Peptides of human urine. HOPPE-SEYLERS Z. PHYSIOL. CHEM. 313:152–164 (1958). (In German)

Peptides were separated from 83 liters of human urine using charcoal absorption, counter-current distribution paperchromatography and paper electrophoresis. 17 peptides were isolated and analysed. These contained 2–17 amino acid units each.

213. Harpst, H. C., et al. Exfoliative cytology of the urinary tract: evaluation of the millipore technic. ACTA CYTOL. 5:195–197, May–Jun 1961. (In English)

214. Harsing, L.
Mechanism of hypotonic urine excretion.
ACTA PHYSIOL. ACAD. SCI. 16:10 (1959)
(In German)

215. Hart, K. T.
Hydrolysis of urinary metabolites of 2-methyl-1:4-naphthoquinone. PROC. SOC. EXP. BIOL., N. Y. 97:848–851 (1958).

Urinary metabolites of 2-methyl-1 : 4-naphthoquinone were separated by paper chromatography and their response to various hydrolytic procedures studied. Three conjugates PO_4, glucuronide, and SO_4 were hydrolysed by HCl and by ceric SO_4. The SO_4 was hydrolysed to a greater degree by HCl, but ceric SO_4 was more effective in splitting PO_4 and glucuronide. Rat urine treated with HCl or ceric SO_4 contained significant amounts of unhydrolysed SO_4 but both reagents together were effective. 2-Methyl-1 : 4-naphthoquinone was released from the glucuronide and SO_4 after incubation with Ketodase.

216. Hasan, J., Laamanen, A. and Niemi, M.
Effect of thermal stress and muscular exercise, with and without insulin hypoglycaemia, on the body temperature, perspiration rate, and electrolyte and lactate content of sweat. ACTA PHYSIOLOGICA SCANDINAVICA (Stockholm) 31:131–136 (1954). (In English)

The effects of thermal stress (Finnish Sauna bath) and muscular exercise (on treadmill) on the rise in body temperature, on the sweating rate, and on the electrolyte and lactate content of sweat were studied. In one half of the experiments, hypoglycemia was induced by intravenous injections of insulin. There were no significant differences in the rate of sweating and in the composition of sweat during insulin hypoglycemia and during euglycemia. There was some tendency to increased values with decreased blood sugar concentrations in the lactate content of sweat. The rise in body temperature under insulin hypoglycemia was significantly lower than in experiments without insulin injection. The reason for this observation is briefly discussed.

217. Haskins, W. T.
Simple qualitative test for chloroquine in urine.
AMER. J. TROP. MED. HYG. 7:199–200 (1958).

A simple technique for the detection of chloroquine in urine samples under field condtions is described.

218. Häussler, A.
Estimation of N^1-sulphanilyl-N^2-n-butyl-carbamide (BZ55) in serum, urine, and feces. ARZNEIMETTEL-FORSCHUNG. 6:393–394 (1956). (In German)

Estimation of BZ55 depends on its diazotisation and coupling with thiocol, the extinction being determined at 470 mμ. The calibration curve is linear over a range of 10 to 100 μg. Details of extraction from serum, urine, and feces are described.

219. Hawk, P. B., Oser, B. L. and Summersen, W. H.
THE URINE IN PRACTICAL PHYSIOLOGICAL CHEMISTRY. Lee and Febiger, Philadelphia, Pa., 1956, 13th Ed., p. 788.

The urine composition is as follows:

Urine	Composition of Average Normal Urine Daily Excretion
Constituent	Amount (gms.)
Water	1200
Solids	60
Urea	30
Hippuric acid	0.7
Uric acid	0.7
Creatinine	1.2
Indican (Indoxyl potassium sulfate)	0.01
Oxalic acid	0.02
Allantoin	0.04
Amino acid nitrogen	0.2
Purine bases	0.01
Phenola	0.2
Cl as NaCl	12.0
Na	4.0
K	2.0
Ca	0.2
Mg	0.15

Constituent	Amount (gms.)
β as SO_2	2.5
Inorganic sulfates as SO_3	2.0
Neutral sulfur SO_3	0.3
Conjugated sulfates as SO_3	0.2

220. Hayashi, Y.
[On evaluation of results of qualitative and quantitative examination] J. THER. (Tokyo) 43:2249-2253, Dec 1961. (In Japanese)

221. Hecht, G.
Excretion of colloids [polyvinylpyrrolidone] by kidney. KLIN. WSCHR. 37:140-143 (1959). (In German)

222. Hegsted, D. M., et al.
Variations in riboflavin excretion. J. NUTR. 60:581-597 (1956).

Riboflavin concentration was determined in urine samples collected every two or four hours. Single urine specimens gave a poor estimate of riboflavin excretion. There was a greater variation in excretion per ml. of urine than when expressed per hour or per g. of reatinine. For accurate estimates the longest possible collection period should be attempted i.e. the best sample was that obtained upon waking in the morning.

223. Hellen, C.
Urinary excretion of meso-inositol in relation to diet. BULL. SOC. CHIM. BIOL. (Paris) 39:633-640 (1957). (In French)

Physiological variations in the urinary excretion of meso-inositol do not appear to be connected with the varying proporations of this substance found in different foods. The additional ingestion of 1-4 g. of meso-inositol or inositol PO_4 does not increase the quantity of inositol found in the urine.

224. Hellmann, K. and Weiner, J. S. Antidiuretic substance in urine following exposure to high temperatures. AMER. JOUR. PHYSIOL. 6:194–198. Sep 1953.

The effect of short exposure to high temperatures on the output of antidiuretic substance in the urine of healthy young men has been studied. No antidiuretic activity was found in the urine passed immediately prior to entering the hot room and rarely in the hot room itself. Urine passed after leaving the chamber, however, in nearly every case showed antidiuretic activity.

225. Hellman, K. Excretion of urinary adrenocortical steroids during heat stress. J. ENDOCR. 14:209–216 (1956).

The output of urinary adrenocorticoids has been studied in man before, during, and immediately after exposure to high environmental temperature. While there was no significant change in the excretion of 17-hydroxycorticoids, cortisone, and cortisol or of tetrahydrocortisone and tetrahydrocortisol there was a significant increase in the output of aldosterone.

226. Henn, O. [Chloride content of sweat at high temperatures and high relative humidity during rest] DER CHLORIDGEHALT DES SCHWEISSES BEI HOHER TEMPERATURE, HOHER RELATIVER FEUCHTIGKEIT, ABER KÖRPERLICHER RUHE. – ARBEITSPHYSIOLOGIE (Berlin) 15:93–98 (1953). (In German)

The effects of hot and humid environments on the chloride content of sweat were experimentally investigated in resting individuals whose body temperatures were rising. An increase was noted in sweat chloride concentration as well as an increase in the total amount of chlorides excreted. After lengthy acclimatization, the amount of chlorides excreted in sweat decreased. A short period of acclimatization, however, may produce the opposite results. Contradictory values were obtained for serum chlorides after acclimatization, as both increases and decreases in blood serum concentration were observed in different individuals.

227. Henning, U. and Ammon, R.
Excretion of p-hydroxyphenylpyruvic acid, phenylpyruvic- and other α-keto acids in the urine of healthy human beings. HOPPE-SEYL. Z. PHYSIOL. CHEM. 306:221–228 (1957). (In German)

α-Keto-acids present in normal human urine have been detected by reaction with 2 : 4-dinitrophenylhydrazine and converstion of the resulting hydrazones into the corresponding amino acids namely glyoxylic, pyruvic, hydroxypyruvic, α-keto-γ-thiomethylbutyric, α-keto-β-hydroxybutyric, α-ketoisohexoic, α-keto-β-methylvaleric, phenyl- and p-hydroxyphenyl-pyruvic, oxalacetic, α-ketoglutaric, β-imidazolylpyruvic, and α-keto-n-butyric acid. The problem of tyrosinosis is discussed in the light of the occurrence of p-hydroxyphenylpyruvic acid.

228. Henry, R. J. and Sobel, C.
Chemical determination of urinary catecholamines.
ARCH. INTERN. MED. 100:196–200 (1957).

Urinary excretion of catecholamines (adrenaline and arterenol) was studied in 66 patients with hypertension. Six cases of pheochromocytoma were included in the series. The test advocated for determination of catecholamines in urine possessed a high specificity for pheochromocytoma and therefore a great advantage in the differential diagnosis of this disease.

229. Henry, R. J. and Chiamori, N.
Direct nesslerisation of ammonia formed by urease treatment of blood, serum, and urine.
AMER. J. CLIN. PATH. 29:277–280 (1958).

One or more substances, normally present in filtrates of serum and in samples of urine, depress the color in the 480–540 mμ range. Correct results are obtained if the color is read at 420 mμ within one minute of adding the Nessler's reagent to the reagent to the reaction mixture.

230. Henseke, G. and R. Neinass
The depilatory action of human skin grease.
HOPPE-SEYLERS Z. PHYSIOL. CHEM.
310:125–136 (1958). (In German)

Depilating substances are present in the non-saponifiable fraction of human skin grease. These are saturated hydrocarbons with C_{26-30}. The depilatory action is probably due to impeded skin respiration caused by the greasy paraffinic layer covering the skin.

231. Heremans, J.
Electrophoresis of urinary colloids. CLIN.
CHIM. ACTA 3:34–39 (1957). (In French)

After filtering off the uromucoids and concentrating the urine by ultra-filtration, 3 types of urinary colloids could be distinguished: I. Gross renal permeability, nephrotic syndrome: proteinuria, albumin and orosomucoid. II. Slight renal premeability, e.g. congestive heart failure: minimum proteinuria, qualitative the same as in I. III. Muco-proteinuria, febrile conditions, infections, traumas: slight proteinuria, orosomucoid and chondroitin SO_4.

232. Heremans, J. F., Vaerman, J. P. and
Heremans, M. T.
Acid mucopolysaccharides of normal urine.
NATURE 183:1606 (1959).

233. Hernando, L., et al.
Physiocochemical method for estimation of
aldosterone in urine. METABOLISM 6:518–543
(1957).

The method is described and its reliability and usefulness are discussed. Levels of aldosterone excretion in normal subjects and in patients suffering from a variety of endocrine and other disorders have been determined. The effect on the excretion of aldosterone of manipulation of the dietary intake of water, Na and K, of the administration of ACTH, growth hormone and pitressin, of natural and synthetic steroids, and of amphenone were studied. Chemical and biological characteristics of an unknown substance isolated from the urine of subjects on a low Na diet are described.

234. Herrmann, W. and Silverman, L.
Method for determination of urinary pregnane-3α : 17-α : 20-α-triol. PROC. SOC. EXP. BIOL., N. Y. 94:426-428 (1957).

The urinary extract is chromatographed on florisil. The eluate containing pregnanetriol is oxidized with bismuthate, and the pregnanetriol determined as ketogenic steroid.

235. Hertzman, A. B.
Individual differences in regional sweating.
J. APPL. PHYSIOL. 10:242-248 (1957).

Total sweating rates in 5 subjects were very similar in comparable environments but the regional patterns of sweating were variable. There are some definite trends in the pattern however. The skin of the chest and abdomen sweated maximum along a zone just lateral to the midsternal line, the sweating rate then falling off to a minimum at the axillary line. Anterior and lateral aspects of the thigh and the whole calf showed a high sweating rate. At lower temperature the lower extremities tend to dominate sweating but trunk sweating increases relatively quickly with increase in total sweating rate.

236. Herzmann, J., Stembera, Z. K. and Vrchlabska, E.
Residual pregnanediol. ENDOKRINOLOGIE 38:67-69 (1959). (In German)

Material isolated from 25 liters of male urine and 25 liters menopausal urine was identified as pregnane-3α-20α-diol by Debye-Scherrer-Hull röntgenography.

237. Hetzel, B. S., et al.
Changes in urinary nitrogen and electrolyte excretion during stressful life experiences, and relation to thyroid function. J. PSYCHOSOM. RES. 1:177-184 (1956)

Increases in N and K excretion (but not in urine flow) were significantly greater in euthyroid than in hypothyroid subjects. This difference was less if the hypothyroid subjects were given (-)-triiodothyronine, i.v. It is suggested that the thyroid participates in rapid metabolic adjustment.

238. Heyrovsky, A.
New method for determination of inulin in plasma and urine. CLIN. CHIM. ACTA 1:470-474 (1956). (In English)

This is a rapid convenient method for determining inulin in plasma and urine. The reaction is based on the purple-violet color given by fructose and β-indolacetic acid in concentration HCl. The method is reliable for clearance studies, and in a number of experiments the error was about one percent.

239. Hiatt, H. H., Goldstein, M. and Tabor, H.
Urinary excretion of formiminoglutamic acid.
J. CLIN. INVEST. 37:829-832 (1958).

Using an enzymic spectrophotometric method for the assay of formiminoglutamic acid, small amounts were found in the urine of normal adults and children. A marked increase was found in the urine of patients with leukaemia after amethopterin (methotrexate) therapy.

240. Hodgson, G., et al.
Separation and properties of urinary hemopoietine.
BLOOD 16:1398-1410, Oct 1960.

241. Hoeprich, P. D.
Culture of the urine. J. LAB. CLIN. MED.
56:899-907, Dec 1960.

242. Holness, N. J., Lunnon, J. B. and Gray, C. H.
Identification of some adrenocortical steroids in urine. J. ENDOCRINO. 14:138-145 (1956).

The two steroids R_3 and R_4, previously described by de Courcy, et al. (1953) and which lack the Δ^4-3-keto group, were identified as tetrahydrocortisol (5 β-pregnane-3α : 11β : 17α : 21-tetrol-20-one and tetrahydrocortisone (5 β-pregnane-3α : 17α : 21-triol-11-20-dione). The Δ^4-3-ketone, X , is shown to be identical with Reichstein's compound E (Δ^4 pregnane-11β : 17 α β 20β : 21-tetrol-3-one). X_4 has chromatographic properties resembling Reichstein's compound U (Δ^4-pregnane-17α : 20β : 21-triol-3 : 11-dione).

243. Honegger, C. G.
Volatile amines in human urine. HELV. PHYSIOL. PHARMACOL. ACTA 14:C30-31 (1956). (In German)

244. Horton, E. W.
Human urinary kinin excretion. BRIT. J. PHARMACOL. 14:125-132 (1959).

The isolated rat duodenum is relaxed by low concentrations (10 ug./ml.) of plasma and urinary kinin; vasopressin and exytocin in large doses (100 mμ/ml.) also relax the rat duodenum. This tissue contracts in the presence of ACh, substance P and 5HT. The use of rat uterus and rat duodenum in parallel assays using plasma kinin as a standard is described. This method will not distinguish between kinins of different origin. Studies of normal urinary kinin excretion are reported.

245. Horton, E. W.
Estimation of urinary kallikrein. J. PHYSIOL. (London) 148:267-282 (1959).

A new method is described. When kallikrein is incubated with acid-treated dog plasma, the rate of plasma kinin (kallidin) formation is proportional to the concentration of kallikrein over the range 2.5-40 mM kallikrein/ml. plasma. The kinin is estimated on the isolated guinea-pig ileum and the amount of kallikrein is determined by referring to a standard curve. The 24 hour urinary excretion of kallikrein in one subject estimated by this new method, varied from 300-450 units, figures which fall within the range reported by previous workers using different methods.

246. Horwitt, M. K., et al.
Tryptophan-niacin relationships in man. Studies with diets deficient in riboflavin and niacin together with observations on the excretion of nitrogen and niacin. J. NUTR. 60(1):1-43 (1956).

Fifteen mental patients on a diet containing only 5.8 mg. niacin [NIA] and 265 mg. trytophan [TRY] per 2300 cal. for 38 to 87 weeks showed no clinical evidence of pellagra. About 60 mg. TRY were equivalent to 1 mg. NIA, i.e. either of these amounts equals one "NIA equivalent." The level below which pellagra developed was 8.8 NIA equivalent for the first 2000 cal. with 0.44 equivalent for each extra 100 cal. Urinary excretions of NIA and TRY were little guide to their dietary supplies. N'-Methylnicotinamide excretion was an index of NIA-TRY availability but that for quinolinic acid was poorly related. TRY inlactalbumin and L-TRY were equally available for conversion to NIA. Ariboflavinosis was unaffected by low dietary levels of NIA, TRY or supplementary vitamin B_{12}.Scrotal dermatitis was consistently seen in ariboflavinosis.

247. Houghton, B. J. and Pears, M. A.
Cell excretion in normal urine. BRIT. MED. J. 1:622-625 (1957).

Rate of excretion of leucocytes and nonsquamous epithelial cells in normal subjects was 18,000-196,000 per hour. In 3 males no charactersitic pattern of excretion was found over several days. Rate of excretion in some pathological urines is compared with normals.

248. Huis in't Veld, L. G.
Specificity of method of Klopper, Michie and Brown for determination of 5β-pregnane-3α, 20α-diol in urine. ACTA ENDOCR. (Copenhagen) 31:65-68 (1959). (In English)

249. Human, L. E., Middleton, M. and Geiger, E. Effect of galactose ingestion on urinary amino acid excretion in rat. AMER. J. PHYSIO. 193:69–72 (1958).

Groups of weanling rats were fed diets containing various levels of galactose or glucose or both. The excretion of amino acids was not affected by the type or quantity of ingested carbohydrate. It seems likely, therefore, that the aminoaciduria observed in galactosaemic infants must be due to some cause other than the toxic effects of galactose itself or a competition for the renal reabsorption mechanism.

250. Hunt, J. N. Influence of dietary sulphur on urinary output of acid in man. CLIN. SCI. 15:119–134 (1956).

No relationship could be demonstrated between the urinary output of acid and the acidity or alkalinity of the ash of the diet, but variation of the dietary content of S caused changes in the urinary output of acid which corresponded with changes in the output of SO_4. There was a correlation between the mean daily output of Ca and that of titratable acid.

251. Hurlock, B. and Talalay, P. Enzymic estimation of urinary steroids. PROC. SOC. EXP. BIOL., N. Y. 93:560–564 (1956).

The method depends on the selective oxidation or reduction of hydroxy- or ketosteroids by highly purified hydroxysteroid dehydrogenases of bacterial origin. The method can estimate 3 α-hydroxysteroids, 3 β- (and 17 β-) hydroxysteroids, 3-ketosteroids and 17-ketosteroids. Using microcells and a Beckman DU spectrophotometer, 0.2–0.5 μg. steroid may be assayed with an accuracy of a few percent in a reaction volume of 0.2 ml.

252. Hurlock, B. and Talalay, P.
Enzymic estimation of steroids in human urine.
ENDOCRINOLOGY 62:201–215 (1958).

Methods for the determination of α- and β-hydroxysteroids in 25 ml. of urine are given. They depend on the use of α- and β-hydroxysteroid dehydrogenases in the presence of DPN as H acceptor and the measurement of DPNH. Pure steroids added to urinary extracts were measured with 93 percent accuracy and the linear relation between amount of urine extract and optical density confirm the reliability of the method. Normal men excret 42 μmoles of α- and 6 μmoles of β-hydroxysteroids daily, on the average, and normal women 44 and 8 μmoles daily. Examples are given of the excretion in abnormal patients and of the use of the method in assaying urinary steroids separated by paper chromatography.

253. Hutchinson, W. P.
THE PERFORMANCE OF A PULSE AMPLITUDE ANALYSER TYPE 1414A FOR ROUTINE URINE ANALYSIS. Atomic Energy Research Establishment (Gt. Brit.). AERE rept. no. Med/R 2455; HX 3819, Nov 1957, 11p. ASTIA AD-159 061.

254. Ingle, D. J., Meeks, R. C. and Humphrey, L. M.
Effects of exposure to cold upon urinary nonprotein nitrogen and electrolytes in adrenalectomized and nonadrenalectomized rats. AMER. JOUR. PHYSIOL. 173:387–389, Jun 1953.

Both normal and adrenalectomized rats (the latter receiving 4 ml. of adrenal cortical extract daily) exhibited the same general pattern of response to cold and of recovery at normal temperature. During exposure to cold (as low as 1°C.) the rats lost weight and excreted increased amounts of nonprotein nitrogen and K. These changes were reversed when the temperature was elevated to 26°C. When the temperature was elevated from 1° to 26°C., all of the rats showed a sharp increase in weight and a decrease in sodium and chloride excretion. This response lasted for only 24 hours. The metabolic responses to cold, which occurred in the absence of the adrenal glands, must represent extra-adrenal regulatory mechanism.

255. Jabir, F. K., Roberts, S. D. and Womersley, R. A. Renal excretion of magnesium. CLIN. SCI. 16:119–124 (1957).

Ingestion of NH_4Cl in human subjects increased the excretion of Mg. In mild acidosis, carbonic anhydrase inhibition with acetazolamide decreased Mg excretion. KCl ingestion had no consistent effect. Infusion of $MgSO_4$ decreased K output but did not appear to modify the normal diuresis which follows carbonic anydrase inhibition.

256. Jackson, S. H. Resolution of urinary or serum proteins by chromatography on DEAE cellulose columns with particular reference to urinary proteins after thermal burns. CANAD. J. BIOCHEM. 39:881–899 (1961).

The usual electrophoretic fractions of serum proteins, obtained by the starch block technique, were examined further by DEAE-cellulose chromatography and by starch gel electrophoresis. Twenty-two different serum proteins were distinguished by the combination of starch block electrophoresis and DEAE-cellulose chromatography. The application of DEAE-cellulose chromatography to the resolution of urinary proteins was described. The examination of urines from patients with severe burns was reported.

257. Jacobsen, E. Determination of 2-methyl-2:4-pentane diol (hexylene glycol) in urine of man and rats. ACTA PHARMACOL. (Copenhagen) 14:195–206 (1958) (In English)

The method described allows the recovery of 70 to 100 percent of hexylene glycol in urine.

258. Jahnke, K. and Heinzler, F.
Ultraviolet absorption of isolated serum and urine proteins. SCHWEIZ. MED. WSCHR. 87:1559-1562 (1957). (In German)

Ultraviolet absorption curves of isolated serum and urine proteins in 0.05 N NaOH showed two absorption maximums at 284 and 280 mμ, with the exception of albumin with its low trytophan content which had a peak at 292 mμ. Examination of the u.v. absorption (260-310 mμ) of isolated globulins in γ-hyperglobulinaemic, plasmocytoma and Bence-Jones proteinuria did not reveal essential or consistent changes; however, macroglobulins did show changes in the absorption coefficient assocated with low tyrosine and tryptophan content. The clinical significance of such determinations is discussed.

259. Januszewica, W. and Wocial, B.
Estimation of catecholamines in urine by fluorometric method. ENDOKR. POLSKA 9:71-80 (1958). (In Polish)

260. Jayle, M. F., et al.
Urinary phenolic steroids. I. Determination. CLIN. CHIM. ACTA 4:276-296 (1958) (In French)

The conjugated oestrogens are hydrolysed by β-glucuronidase and arylsulphatase. The ethereal extract is washed with Na_2CO_3 and separated into neutral and phenolic fractions with N NaOH. The purified phenolic extract is measured photometrically by which oestriol, oestrone and oestradiol- 17β are estimated, at 476, 516, and 556 mμ. The method is accurate and specific when the content of phenolic steroids is 30 μg./1000 ml. or more. Average recovery of added oestrogens: 82 percent for oestriol, and 72 percent for oestrone (when a saponification procedure is used). Below 20 μg./1000 ml. the method is no longer specific.

261. Jayle, M. F., Scholler, R. and Veyrin-Forrer, F.
Urinary phenolic steroids. II. Clinical applications. CLIN. CHIM. ACTA 4:401-410 (1959). (In English)

262. Jayle, M. F., Judas, O., and Crepy, O.
Methods for estimation of urine pregnanediol.
BULL. SOC. CHIM. BIOL. (Paris)
41:1441-1454 (1959). (In French)

The method involves butanol extraction, enzymic hydrolysis and chromatography. If the butanol extraction is omitted then the determination becomes less accurate but nevertheless is still sufficient for clinical purposes. These methods are well adapted to functional studies of corpus luteum activity.

263. Jensen, C. C.
Quantitative determination of some tetrazolium salt-reducing adrenocorticoids in human urine.
ACTA, ENDOCR. (Copenhagen) 30:222-230
(1959) (In English)

A method is described for the quantitative extraction without previous hydrolysis of a group of urinary neutral ether-solution steroids, which reduce 2:3:5-triphenyltetrazolium chloride. Normal values for 24 hour excretion in 108 females and 86 males are given. Examples are given of the H_2SO_4 absorption spectra in spontaneously increased excretion of tetrazolium salt-reducing substances and in cases of increased excretion during ACTH treatment. Differences in the content and distribution of 17-oxy and 17-deoxycorticoids under various conditions are noted.

264. Jensen, K. B.
Slow contracting substances in human urine.
BRIT. J. PHARMACOL. 13:271-275 (1958).

A method is described for purifying the rat uterus-stimulating component in human urine and absorption on Al_2O_3 or paper pulp allowed the separation of 2 fractions. The recovery from Amberlite IRC-50 columns is discussed. Butanol extracts of urine were more stable than urine.

265. Jirka, M. and Kotas, J.
Mucoproteins in eccrine and apocrine sweat in man. CAS. LEK. COS. 97:232–234 (1958). (In Czech)

On investigation of eccrine and apocrine human thermal sweat in 18 subjects a higher content of mucoproteins was found in apocrine sweat in the majority of subjects. This finding is consistent with the different mechanisms of action of the two types of gland.

266. Jirka, M., Kotas, J. and Skramovsky, V.
[Contribution to the excretion of proteins with sweat]. CAS LEK CESK. 100:197–199, 17 Feb 1961. (In Czech.)

267. Johnsen, S. G.
Fractionation of urinary 17-ketosteroids. I. Simplified method for chromatographic separation of urinary androgen metabolites. II. Normal values for men and women at different ages. ACTA ENDOCR. (Copenhagen) 21:127–145, 146–156 (1956).

I. The new method of analysis is based on the Zimmerman reaction without correction for non-specific chromogens. Evidence is presented that the simplifications involved are justified. Good results are obtained in all samples of urine regardless of the level of 17-ketosteroid excretion. The accuracy of the analysis is of the same order as of routine total 17-ketosteroid estimations. The method allows of the adoption of fractionation of the urinary 17-ketosteroids as a clinical routine method. II. Results of the analysis of samples from 215 normal individuals are presented, together with average values and the normal range for the excretion of various 17-ketosteroids fractions for men and women in all age groups. Androsterone usually constitutes a smaller fraction of the 17-ketosteroids in women than in men, and in old men than in young men. The significance of these results is discussed.

268. Johnsen, S. G.
III. Clinical significance of simplified fractionated 17-ketosteroid determination. ACTA ENDOCR. (Copenhagen) 21:157-176 (1956).

After castration of male subjects the excretion of androsterone is decreased to a greater extent than the total 17-ketosteroid output. Fractionated 17-ketosteroid analyses in 29 cases of male hypogonadism, 11 patients with pitutary diseases, 21 hirsuto women, and 3 cases of liver cirrhosis are presented. The results indicate the superiority of the method and the applicability as a clinical routine. The detailed advantages of the method are described.

269. Johnsen, S. G.
Clinical routine method for quantitative determination of gonadotrophins in 24-hour urine samples.
II. Normal values for men and women at all age groups from prepuberty to senescence. ACTA ENDOCR. (Copenhagen) 31:209-227 (1959).
(In English)

270. Johnson, B. C., Hamilton, T. S. and Mitchell, H. H.
"The Excretion of Pyridoxine, 'Pseudopyridoxine' and 4-Pyridoxic Acid in the Urine and Sweat of Normal Individuals," J. BIOL. CHEM. 158:619, May 1945.

A study was made of the excretion of pyridoxine, pseudopyridoxine, and 4-pyridoxic acid in the urine and sweat of four men subjected to a hot, moist environment. Over 85 percent of the total pyridoxine and metabolites excreted in the urine was in the form of 4-pyridoxic acid; 4 to 5 percent was pyridoxine, and 7 to 8 percent was pseudopyridoxine. The percentage composition of these 3 compounds in sweat was similar to that in urine. Total amounts of pyridoxine and its metabolites present in sweat appears to be too small to have any significant influence on the pyridoxine requirements of persons sweating profusely throughout the day.

271. Johnson, B. C., Hamilton, T. S. and Mitchell, H. H. The effect of choline intake and environmental temperature on excretion of choline from human body. J. BIOL. CHEM. 159:5, Jun 1945.

No difference in choline loss through sweat in a hot, moist atmosphere in comparison with the loss in normal air.

272. Johnson, B. C., Hamilton, T. S. and Mitchell, H. H. The excretion of nicotinic acid, nicotinamide, nicotinuric acid, and N^1-methylnicotinanide by normal individuals. J. BIOL. CHEM. 159:231, Jun 1945.

The amounts of nicotinic acid and its metabolites present in sweat are too small to have any significant influence on the nicotinic acid requirements of persons subjected to profuse sweating throughout the day.

273. Johnson, B. C., Hamilton, T. S. and Mitchell, H. H. The excretion of folic acid through the skin and in urine of normal individuals. J. BIOL. CHEM. 159:425, Jul 1945.

Folic acid is excreted in human sweat. It is excreted in larger quantities under conditions of profuse sweating.

274. Johnson, D. F., Heftmann, E. and Hayden, A. L. Determination of individual adrenocortical steroids in urine. ACTA ENDOCR. (Copenhagen) 23:341–357 (1956).

A method is described by which chloroform extracts of hydrolysed urine are chromatographed on silicic acid and graphs are presented relating eluate fraction number against ultraviolet absorption at 240 mμ and against Tetrazolium-Blue reduction. The procedure satisfactorily measures known amounts of deoxy- and dehydrocorticosterone, corticosterone, cortisone, cortisol, and Reichstein's compound S added to the chloroform extract. Illustrative graphs of results with various urine samples are given.

275. Johnson, R. E., Sargent, F., II, and Passmore, R. Normal variations in total ketone bodies in serum and urine of healthy young men. QUART. J. EXP. PHYSIOL. 43:339–344 (1958).

Urinary ketone excretion rates under post-absorptive conditions differed significantly in summer and winter, the mean rates being 0.9 μmol./min. in hot weather and 2.8 μmol./min. in cold weather. Mean serum ketone level was 0.7 mmol./l. regardless of season. The suggested upper normal limits are 1.4 mmol./l. for serum and 5 μmol./min. for urine.

276. Johnson, R. Improvement of the method for determination of plasma and urine hemoglobin. ORAL SURG. 12:493–496, Apr 1959.

277. Johnson, W. D. Urine sediment cytology. A method of hormonal evaluation. DELAWARE MED. J. 34:46–48, Feb 1962.

278. Jones, G. M.
AIRCREW FATIGUE IN LONG RANGE MARITIME RECONNAISSANCE. VII. STUDY OF RENAL EXCRETION OF UROPEPSINOGEN. RAF Inst. of Aviation Medicine (Gt. Brit.), Farnborough; issued by Flying Personnel Research Committee (Gt. Brit.), rept. no. FPRC 907.7, Aug 1956, 11p. ASTIA AD-112 724.

An increase in the rate of renal uropepsinogen excretion was found in 16 active aircrew members during test days (those including a 15-hour night sortie) as compared to rest days. No significant trend in the rate of excretion was detected either from beginning to end of the nine-day test period, or from beginning to end of a sortie. There was, however, a significantly greater water output during the first five hours than during the remainder of the sortie, a finding thought to reflect, in part, a general disinclination for food and drink as a sortie progresses. It is concluded that, in the absence of any other obvious cause, the increased uropepsinogen excretion on test days may reflect in some measure the arduous or fatiguing nature of the operational experiences encountered.

279. Jones, R. V. H. and de Wardener, H. E.
Urine concentration after fluid deprivation or pitressin tannate. BRIT. MED. J. i:271–274 (1956).

In 49 normal subjects (41 male, 8 female, average age 24 years) urine osmolarity was greater, and solute output and urine flow less, after 48 hours dehydration than after 5 units of pitressin tannate in oil subcut. Difference in osmolarity does not depend on rate of solute output, or on quantity or quality of pitressin administered. It is concluded that a factor other than the anti-diuretic hormone, or rate of solute output, is concerned in concentrating the urine during dehydration.

280. Irvine, W. T., Duthie, H. L. and Waton, N. G. Urinary output of free histamine after meat meal. LANCET 1:1061–1064 (1959).

The rise in excretion of free histamine in urine after ingestion of a meat meal is similar in amount and duration to the rise obtained when the approximate (-)-histidine content of the meal is given instead of the meal itself. Previous reduction of the bacterial content of the intestine (with succinylsulphathiazole in man, and with chlortetracycline in dogs) significantly diminishes these rises. Succinylsulphathiazole and chlortetracycline do not prevent absorption of histamine from the intestine, nor do they prevent decarboxylase in the tissues from converting histidine to histamine in vitro.

281. Ishihara, I., Sake, Y. and Ishigaki, K. URINARY CATECHOLAMINES AND 17-OHCS EXCRETIONS AFTER MUSCULAR EXERCISE. Annual Report Research Institute of Environmental Medicine, Nagoya University, 1958, v. 7, p. 19–26.

282. Iuchi, I. and Shibata, S. New method for the examination of sugars in urine. Separation and identification of urinary sugars by means of paper electrophoresis at high potential gradient. CLIN. CHIM. ACTA 5:42–47 (1960).

The sugars in 10 μl of urine-buffer mixture were separated by paper electrophoresis at high V, and the color developed with silver solution. Diabetic urine showed 3 distinctly separated bands, which were glucose, uric acid, and urea-creatinine. Glucose, fructose, ribose, rhamnose, lactose, maltose, sucrose, glucuronic acid, and glucosamine could easily be identified by this technique. Sorbose and xylose were difficult to differentiate from glucose. Overlapping was seen with the bands of galactose and fructose, and ribose and mannose. The method is rapid and only small amounts of urine are needed.

283. Kandrác, M.
Excessive α-ketoglutarate excretion in urine – new metabolic abnormality? CAS. LÉK. CES. 97:1477–1482 (1958). (In Czech.)

284. Kapeller-Adler, R. and Renwick, R.
Enzymic breakdown of histamine and cadaverine in human serum and urine. CLIN. CHIM. ACTA 1:197–209 (1956)

A slightly modified micro volumetric technique has shown that "histaminase" and "cadaverinase" occur in normal male and female serum and urine in minute amounts. Increased serum histaminase activity was found in 4 patients with thyrotoxicosis, in a myxoedema patient treated with thyroxine, and in a case of diabetes. In normal pregnancy, serum and urine histaminase and cadaverinase values were increased. In some case of pre-eclamptic toxaemia the serum and urinary histaminase tended to be low. The cadaverinase values in some such cases were normal.

285. Kapeller-Adler, R. and Iggo, B.
Histamine and its derivatives in human urine. BIOCHIM. BIOPHYS. ACTA 25:394–402 (1957).

Ion exchange and paper chromatographic techniques are used in the isolation of iminazole compounds from human urine. Two new pharmacclogically active compounds, N-methylhistamine and N-dimethylhistamine, were identified, as well as histidine, histamine, and acetylhistamine. The 2 compounds, and also acetylhistamine, were not attacked by the histaminase of pig kidney, but partially inhibited the enzymic degradation of histamine itself.

286. Karki, N. T.
Urinary excretion of noradrenaline and adrenaline in different age groups, its diurnal variation and effect of muscular work on it. ACTA PHYSIOL. SCAND. 39(132):7–96 (1956). (In English)

287. Kechek, A.
Determination of amount of protein in blood serum fractions and in urine using stable standard turbidity. LABOR. DELO 5:15–17 (1956). (In Russian)

288. Kellie, A. E. and Wade, A. P.
Steroid conjugates. I. Separation of urinary 17-ketosteroid glucuronides and sulphates and their composition in normal persons. ACTA ENDOCR. Kbh. 23:357–370 (1956).

A method for the separation of these is described based on acetylation of an ether/ethanol extract of unhydrolysed urine to which $(NH_4)_2SO_1$ had been added. Acetylation renders the glucuronides water insoluable and soluable in organic solvents without affecting the sulphates. The sulphate and glucuronide fractions were each hydrolyzed with acid and studied by gradient elution from an alumina column. Ten peaks could be separated, 7 of which are identifiable by paper chromatography. The distribution of the total ketosteroid among these peaks differed in detail from that obtained when the glucuronide was separated from sulphate enzymically but the general pattern was the same. Results of the analysis in this way of 6 urine samples (3 from men and 3 from women) are reported. Androsterone plus aetiocholanolone accounts for most of the total ketosteroid, usually about 40–60 percent as glucuronide and 5–10 percent as sulphate. The other steroids were present in more variable proportions, dehydroisoandrosterone being usually the next in amount chiefly as sulphate.

289. Kellie, A. E. and Wade, A. P.
Analysis of urinary 17-oxo steroids by gradient elution. BIOCHEM. J. 66:196–206 (1957).

An improved method is described for the analysis of the 17-oxosteroid fraction of urine. It avoids formation of artefacts during hydrolysis of conjugates and gives better separation of individual 17-oxo steroids.

290. Kellner, K., Ley, H. and Stark, T.
Cystine metabolism in normal subjects and in patients with malignant disease. KLIN. WSCHR. 35:276-280 (1957). (In German)

A method for the estimation of cystine in urine is described. The urinary excretion of cystine and the total S excretion in urine in 24 hours were determined in normal subjects and in patients with malignant and non-malignant disease, both under normal conditions and following the oral administration of 2 g. of cystine. Variation in total S excretion was considerable and a statistical difference between the groups was not established. However, following loading with cystine the urinary S excretion in the malignant group < the normal group. Possible reasons for this difference are discussed.

291. Kerby, G. P.
Occurrence of acid mucopolysaccharides in human leucocytes and urine. J. CLIN. INVEST. 34:1738-1744 (1955).

Acid mucopolysaccharides have been isolated from urine and an unsuccessful attempt to relate these to a chondroitin sulphate-like substance found in leucocytes was made.

292. Kerp, L., Merker, H. and Frey, J.
Method and dignostic value of enumeriation of the cellular elements in urine. KLIN. WSCHR. 34:1147-1151 (1956). (In German)

Some modifications of the present methods for enumerating cellular elements in urine are described. The values are expressed in cells per min., using 3 hour urine samples. The normal r.b.c. excretion in 123 healthy subjects ranged from 0-1850/min. mean = 730/Min. W.B.C. excretion was 0-2250/min. mean = 990/min. R.B.C. or w.b.c. excretion of more than 2000 or 4000/min. respectively is pathological. Five examples of pathological cellular excretion are described.

293. Kessler, G. and Schmidt, E. G.
Determination of aromatic acids and phenols in urine of white and negro male adults. J. LAB. CLIN. MED. 50:282–285 (1957).

Methods are described for the microbiological determination of phenyl-lactic, p-hydroxy-phenyl-lactic and indole-3-lactic acids in urine. The volatile phenolic and aromatic hydroxy-acid fractions were determined chemically with the Folin-Ciocalteau reagent. While individual urines usually showed wide variations in these constituents, no obvious chemical differences between the urines from white and negro subjects were found.

294. Keutel, H. J., Schweispurth, R. and Litos, M.
The effect of bacteria on glucoronic acid derivatives in the urine. KLIN. WSCHR. 39:1130–1132, 1 Nov 1961. (In German)

295. Kimmig, J., et al.
N-(β-indolyl-3-acryloyl)-glycine isolation from urine and synthesis. PHYSIOL. CHEM. 311:234–238 (1958). (In German)

The compound is the chromogen which forms a red dye solution in amyl alcohol, when urine is acidified with concentrated HCl.

296. King, J. S., Jr., et al.
Total non-dialysable solids [TNDS] in human urine. I. Amount and composition of TNDS from normal subject. J. CLIN. INVEST. 37:315–321 (1958).

TNDS of normal human urine were recovered by lyophilisation and found to be 433 ± 114 mg./24 hr. Approximate composition of TNDS was: protein 47 percent, protein-bound hexose 16.6 percent, sialic acid 9.7 percent, hexosamine 6.2 percent, lipids 3.3 percent, 'bound' water 12.2 percent, ash 8.5 percent.

297. King, J. S.
Total nondialysable solids of human urine. III. Method for subfractionation of RS-1 solids. J. CLIN. INVEST. 38:1520–1524 (1959).

The non-ultrafiltrable, buffer-solution (veronal pH 8.6) fraction (Fraction RS-1) of normal human serum is subjected to the first steps of Cohn's method 10. Three distinctly different apparently reproducible fractions were obtained. It was not possible to separate muco-substances from proteins by this method. Data suggest RS-1 solids are almost entirely mucosubstances.

298. King, J. S. and Boyce, W. H.
Total non-dialysable solids [TNDS] in human urine. V. Subfractionation of ultrafiltrate [UF-O] fraction. J. CLIN. INVEST. 38: 1927–1933 (1959).

Separation of the ultrafiltrable fraction of the total non-dialysable solids of the normal urine into 6 arbitrary but reproducible subfractions is reported. 24 hour excretion rates and overall chemical composition of these subfractions is presented.

299. King, J. W.
Topics in microbiology. The evaluation of bacteriologic cultures of urine. AMER. J. CLIN. PATH. 36:60–62, Jul 1961.

300. King, J. S., et al.
Total nondialyzable solids in human urine. X. Isolation and characterization of non-ultrafiltrable material with blood-group substance activity. ARCH. BIOCHEM. 95:310–315, Nov 1961.

301. Kirby, J. K., Pelphrey, C. F. and Rainey, J. R., Jr. Analysis of urinary calculi. AMER. J. CLIN. PATH. 27:360-362 (1957).

302. Kitamura, M. and Kuchi, I. Improved diacetylmonoxime method for determination of urea in blood and urine. 4:701-706 (1959).

Blood serum is deproteinized with TCA, and the resulting filtrate heated for 30 min. with diacetyl monoxime reagent in the presence of perchloric acid until a stable yellowish color develops. The color is measured at 470 mμ. This method is simple and reliable and suitable for routine use: it compares well with the conventional urease method.

303. Kleeman, C. R., Bass, D. E. and Quinn, M. Effect of 6063, sodium bicarbonate and ammonium chloride on electrolyte composition of thermal sweat. PROC. SOC. EXPER. BIOL. AND MED. 88:253-256, Feb 1955.

Thermal sweat collected by arm bags from male subjects exposed for weekly periods of 1 to 1-1/2 hours to a temperature of 120°F. was found to be a moderately acid secretion, low in ammonia and titratable acid. Administration of a carbonic anhydrase inhibitor (6063), sodium bicarbonate, or ammonium chloride did not alter the acid-base composition of sweat regardless of changes in composition of extracellular fluids and urine. It is concluded that sweat glands have no regulatory role in the maintenance of the hydrogen-ion concentration of body fluids.

304. Kligman, A. M. and Shelley, W. B. Biology of human sebaceous gland. J. INVEST. DERMAT. 30:99-125 (1958).

Surface lipids do not control the output of sebum by the sebaceous gland, nor does sweating promote the delivery of sebum. The muscles of piloerection are unable to propel sebum to the surface nor does emotion influence the output of sebaceous glands.

305. Klisiecki, A., et al.
[Effect of rich phosphate diets on urinary urea, ammonia and pH in normal conditions and in renal disorders] ACTA PHYSIOL. (Poland) 11:774-776, Sep-Dec 1960. (In Polish)

306. Klopper, A. I. and MacNaughton, M. C.
Identification of pregnanediol in liquor amnii, bile and feces. J. ENDOCR. 18:319-325 (1959).

Pregnanediol was isolated from liquor amnii and feces and identified by the ultraviolet spectrum of its solution in H_2SO_4. The steroid isolated from bile after injection of progesterone was identified by melting point, and the quantitative relationship between injection progesterone and the biliary excretion of pregnanediol was determined.

307. Knappe, E. and Böckel, V.
Complexometric determination of calcium in urine. PHYSIOL. CHEM. 312:186-192 (1958). (In German)

A simplified method for urinary Ca is described. Interfering anions are removed by cation exchange and Ca titrated complexometrically using Fluorexon or Calcein as indicator. Average error is ± 0.34 mg. Ca/100 ml. of urine.

308. Knorr, D.
Acid phosphatase in urine of yound male persons. KLIN. WSCHR. 36:760-763 (1958) (In German)

At puberty there is a large increase in urinary acid phosphatase. This is attributed to the commencement of active secretion by the prostate.

309. Knudsen, E. A.
[Measurement of local sweat secretion] NORD. MED. 66:1470-1473, 26 Oct 1961. (In Danish)

310. König, M. P.
Simple method for estimation of sugar in urine. "Testape". SCHWEIZ. MED. WSCHR. 86:1028 (In German)

311. Kornel, L. and Wroclaw, M. D.
Renal clearance of free and conjugated 17-hydroxy-corticosteroids in normotensive and hypertensive subjects. LANCET ii:775–776 (1957).

312. Kovach, R. D., Carvalho, H. N. and Almeida, S.
[Experience with Sternheimer-Malbin stain in the examination of urinary sediment] 18:99–102, Feb 1961. (In Portuguese)

313. Kovacs, B. A. and Melville, K. I.
The presence in normal human urine of a substance or substances antagonizing histamine, 5-hydroxytryptamine, and acetylcholine (preliminary report). CANAD. J. BIOCHEM. 40:147–151, Jan 1962.

314. Kraup, O., et al.
Phenolic acids in urine in phaeochromocytoma. KLIN. WSCHR. 37:76–80 (1959). (In German)

Certain phenolic carboxylic acids found in normal urine as well as in phaeochromocytoma may be increased in acute attacks, when they may also be accompanied by an unindentified additional acid.

315. Kraut, H. and Bertelsmeir, I.
Enzymic microestimation of lactic acid [LA] in blood and urine. ANGEW. PHYSIOL. 17:133-143 (1958). (In German)

Lehmann's method of converting LA to pyruvic using the LA dehydrogenase of yeast has been combined with Ørskov's method for extraction of the LA with ether as a preliminary. In trail recovery estimations there were considerable losses unless this extraction was adopted. The method was satisfactory for 0.5 ml. of finger capillary blood and for duplicate estimations the scatter was ±3 percent; for urine it was somewhat greater.

316. Krejci, E., et al.
Polarographic estimation of urocanic acid in sweat. CAS. LEK. CES. 97:857-861 (1958). (In Czech)

Urocanic acid, an important intermediary product in histidine metabolism, can be simply determined polarographically. This acid gives an easily measured wave at pH 4.7 in an acetate buffer which can be used for analysis. The suggested method has been tested in analyses of human sweat. In this case it is sufficient to mix the sweat with the acetate of biological material, where interfering substances may occur, the acid can be determined polarographically after chromatographic separation. An unknown substance in sweat, giving a positive polarographic wave, has also been discovered. On storage of sweat this substance accumulates.

317. Krzemicka, J.
17-ketosteroids and 17-hydroxysteroids in human urine and urine of rabbits and rats. I. Zimmerman chromogens in extracts of urine before and after oxidation by chromatic acid. ACTA BIOCHIM. POLONICA 4:187-201 (1957).

The Wilson and Fairbanks test and the Zimmerman reaction were applied to the extracts. Colors were obtained which approximate closely to the spectrum given by oxidised androsterone. Large amounts of various 17-hydroxysteroids (not hydrolysed by cold HC1) occur in the animal urines.

318. Krzymien, H.
[Factor "Z" in urine] POL. TYG. LEK.
15:457–459, 28 Mar 1960. (In Polish)

319. Kunin, C. M
The quantitative significance of bacteria
visualized in the unstained urinary sediment.
NEW ENGL. J. MED. 265:589–590,
21 Sep 1961.

320. Kutter, D.
[Inhibition of glucose oxidase by urine containing colibacilli] BULL. SOC. SCI. MED.
LUXEMB. 97:259–262, Oct 1960. (In French)

321. Kuz'mina, Yu. L. and Dyudyaev, V. V.
Quantitative assay of sugar in urine by titration.
SBORN. NAUCH. TRUD. IVANOV. MED. INST.
12:478–482 (1957). (In Russian)

Althausen's method gives very low results if the sugar content is high, and slightly high ones if it low. The conditions for titrating with Fehling's solution are worked out; the results are then reproducible, and are comparable with those found by polarimetry.

322. LaBrosse, E. H. and Mann, J. D.
Presence of metanephrine and normetanephrine
in normal human urine. NATURE 185:40 (1960).

323. Langecker, H.
Determination of dehydroepiandrosterone in urine.
ACTA ENDOCR., Kbn., 23:72–78 (1956). (In German)

The distribution of the color between the α and β fractions in the color reactions of Zimmermann and Pettenkofer with dehydroepiandrosterone was investigated in the ketonic fraction of 11 normal urines after careful acid or sulphatase hydrolysis. The same values were obtained with both methods of hydrolysis. A method using digitonin to precipitation dehydroepiandrosterone is described and this procedure is recommended for the determination of the Pettenkofer color reaction in the ketonic fraction.

324. Langston, J. B. and Guyton, A. C.
Effect of adrenaline on the rate of urine formation.
AMER. J. PHYSIOL. 192:131–134 (1958).

Adrenaline and noradrenaline affect urine formation by increasing the arterial pressure, which indirectly increases urinary output, and by acting directly on the kidney to decrease the output. When arterial pressure was held constant only the direct effect was evident.

325. Lansoni, E., Amore, P. and Colombo, O. P.
[Quantitative study of formed elements in the urinary sediment, by means of the Addis test, in the normal child] CLIN. PEDIAT (Bologna) 42:681–687, Aug 1960. (In Italian)

326. Lapin, L. N.
Colorimetric determination of traces of Cu in blood, urine and tissues with dipnenylcarbazone.
BIOKHIMIYA 22:825–829 (1957). (In Russian)

The complex formed on treating the ashed material with diphenylcarbazone is extracted into benzene and assayed at 540 mμ. Microgram amounts can be determined to ± 3 percent.

327. Lathem, W.
Renal excretion of haemoglobin: regulatory mechanisms and differential excretion of free and protein-bound haemoglobin. J. CLIN. INVEST. 38:652-658 (1959).

Excretory rate of free Hb increased linearly with plasma concentration of the free unconjugated form. Calculation gives a GFR of 5 ml./min./1.73 m.^{2} body surface equally 5 percent of insulin clearance. Maximum possible tubule reabsorption was 1.0 ml./min./1.7m.^{2} body surface and therefore too small to give conclusive evidence as to reabsortive activity.

328. Leon, Y. A., Bulbrook, R. D. and Greenwood, F. C.
Changes in oestrogen titre in stored urine. NATURE 183:189-190 (1959).

Preliminary experiments are described.

329. Lepp, A.
Procedure for detection of TSH inhibitor in human urine. PROC. SOC EXP. BIOL., N. Y. 100:683-686 (1959).

330. Leverton, R. M., Waddill, F. S. and Skellenger, M.
Urinary scretion of five essential amino acids by young women. J. NUTR. 67:19-28 (1959).

Quantitative microbiological assyas are presented for the free or total threonine, valine, tryptophan, leucine, phenylalanine, and tyrosine in the urine of young women on a known amino acid intake. The subjects consumed semi-purified diets containing known amounts of crystalized amino acids and diammonium citrate as the chief N sources. Relatively large changes in intake effected only small changes in urinary amino acid excretion. The existance of individual excretion patterns is confirmed.

331. Levey, S. and Keonig, S.
Qulaity control standards for analysis of sodium, potassium and calcium in urine. AMER. J. CLIN PATH. 30:404–406 (1958).

Quality control standards were prepared by passing urine over a column of Amberlite IR 120, and then adding weighed quantities of NaCl, KCl and $CaCO_3$.

332. Levinsky, N. G. and Berliner, R. W.
Changes in composition of urine in ureter and bladder at low urine volume. AMER. J. PHYSIOL. 196:549–553 (1959).

When ureter and bladder of dogs are perfused at flow rates of < 1 ml. per min. movements of H O, urea, Na, K, Cl, <creatinine and H occur, the magnitude of the movement increasing as the concentration gradient and are unaffected by antidiuresis, anaesthesia or surgical manipulations. With a flow rate of 0.1 ml./min. osmolarity may decrease by 10 percent and urea concentration by 15 percent. Urine allowed to collect in the bladder for 30 min. shows a 50–100 percent greater change.

333. Lewis, B. and Richards, P.
Measurement of urinary protein. LANCET 1:1141–1143 (1961).

A turbidimetric method is recommended.

334. Lewis, P. R., Lobban, M. C. and Shaw, T. I.
Patterns of urine flow in human subjects during a prolonged period of life on a 22-hour day. J. PHYSIOL. (London) 133:659–669 (1956).

Eight human subjects lived on a 22-hour day for six weeks. In only one subject did the pattern of urine flow indicate a complete adaptation to the environmental time-scale, and in one other there was some evidence for a progressive improvement in adaptation to a 22-hour routine during the course of the experiment. In the other six subjects the inherent 24-hour rhythm of urine production was maintained throughout the experimental period.

335. Lindberg, W.
[Lead values in urine in relation to urinary specific gravity] NORD. HYG. T. 42:239–246 (1961). (In Norwegian)

336. Lindenblad, G. E., Kaihara, M. and Price, J. M.
Occurrence of N-methyl-2-pyridone-5-carboxylic acid and its glycine conjugate in normal human urine. J. BIOL. CHEM. 219:893–901 (1956).

The daily excretion of N-methyl-2-pyridone-5-carboxylic and -5-formamidoacetic acids in normal urine was 3–6 mg. and 8–12 mg. respectively. Both substances were isolated. Feeding trigonelline, nicotinic acid, nicotinuric acid or 6-hydroxynicotinic acid did not significantly alter the excretion of these pyridones.

337. Ling, N. R.
Spectrophotometric estimation of urinary taurine.
J. CLIN. PATH. 10:100–101 (1957).

All amino acids except taurine are removed from 2 ml. of human urine by treatment with the resin "amberlite" IR 112 (H). The resin is removed by filtration and the taurine in 0.5 ml. of the filtrate is converted into the dinitrophenyl [DNP] derivative by treatment with fluorodinitrobenzene. The DNP derivative is purified by extraction with ethylene dichloride and aniline and estimated by reading the optical d at 360 mμ.

338. Lisowski, Z. and Trazaski, M.
New reagent for sugar detection in urine.
FARM. POL. 14:99–100 (1958). (In Polish)

An aqueous solution of a mixture of $CuSO_4$, lactic acid, and NaOH proved a sensitive reagent for detecting sugar in urine by giving a red precipitate.

339. Llaurado, J. G., Neher, R. and Wettstein, A. Chemical identification of aldosterone in post-operative urine. CLIN. CHIM. ACTA 1:236–241 (1956).

Collections of urine (24 hr.) from 80 patients in the early postoperative period were acidified to pH 1 and extracted with $CHCl_2$. Aldosterone from the pooled sample was chemically identified by conversion to the characteristic γ-lactone which was obtained crystally.

340. Lloyd, D. P. Action potential and secretory potential of sweat glands. PROC NAT. ACAD. SCI. USA 47:351–358, 15 Mar 1961.

341. Lloyd, D. P. Temperature and the action of sweat glands. PROC. NAT. ACAD. SCI. USA 47:358–362, 15 Mar 1961.

342. Loraine, J. A. Quantitative determination of pituitary gonadotrophins in urine. ACTA ENDOCR. (Copenhagen) 24(31)·75–84 (1957). (In English)

343. Loraine, J. A. Some observations on clinical value of pituitary gonadotropin assays in human urine. In: CIBA FOUNDATION COLLOQUIA ON ENDOCRINOLOGY. HUMAN PITUITARY HORMONES. Ciba Foundation, 1959, v.13, p. 217–237.

344. Lozenov, S.
[Nephelometric method for determination of the proteins in the serum, urine and other biological fluids] SUVR. MED. (Sofia) 11:77–90 (1960). (In Bulgarian)

345. Lugg, J. W. H., Bowness, J. M.
Relationships between twenty-four hourly urinary outputs of 17-ketosteroids and creatinine, and weights of twenty adult male-subjects from each of six ethnic groups. AUST. J. EXP. BIOL. MED. SCI. 35:395–416 (1957).

Estimates of the weight in kg. [W], of the 24-hour urinary output of creatinine in g. [C] and of 17-ketosteroids in mg. [K] were made for 20 adult male subjects from the Chinese, European, Indian, Malay, Negrito and Senoi ethnic groups resident in Singapore and the Federation of Malaya. W and C are approximately normally distributed within the groups and K appears to be approximately log-normally distributed. The correlation within ethnic groups and overall between pairs of variates suggests that the compound variates log (K + 1)/W and log (K + 1)/C may be useful in assessing the status of a subject with respect to 17-ketosteroid output. There is a low probability that the sampler from the 6 ethinic groups could all have been drawn from the same, normally distributed, population.

346. Macfarlane, W. V., et al.
Heat, salt and hormones in panting and sweating animals. NATURE 182:672–673 (1958).

Evaporative cooling in animals is related to Na excretion. Na is retained by the kidney in man during sweating, but panting sheep which are distilling water from the respiratory surfaces eliminate Na in their urine while panting, in compensation for the water loss. In both man and sheep extracellular water is mobilized more easily from other sources in summer than in winter. In both man and sheep urinary flow diminishes on heating and may fall to 0.2 ml./min. before antidiuretic substance is detectable in the plasma.

347. Machattie, L. A.
Graphic visualization of the relations of metabolic fuels: heat: O2: carbon dioxide: water: urine N. J. APPL. PHYSIOL. 15:677--683, Jul 1960.

348. Mai, L. A.
Simple volumetric method of assaying uric acid in urine. LABOR. DELO 5:41-43 (1957). (In Russian)

A simple and rapid method is described. The acid is reduced in alkali, and the resulting dark-blue complex titrated with ferricyanide. The ferricyanide is standardized against Li urate. The error does not exceed ± 5 percent. L-ascorbic acid, of all the substances present in normal urine, is the only one that interferes, and then only if it is present in large amounts.

349. Malangeau, P.
Cyclohexitols present in human urine. BULL. SOC. CHIM. BIOL. (Paris) 38:729-741 (1956). (In French)

Ion exchange resins were used to concentrate hexitols in the urine. Thus 100 ml. of urine yielded 40 mg. of extract the composition of which could be studied by paper chromatography. Examination of 200 urines from human adults of both sexes showed the presence of mesoinositol in every case. Sixty-seven percent of the urines analysed also contained scyllitol. The climination of these two isomers is similar for both sexes, and their presence does not seem to show any seasonal or dietary fluctuations.

350. Malhotra, M. S.
Salt requirements in the tropics during summer. NATURE 182:1036 (1958).

Unacclimatised persons living in the tropics secrete more NaCl in sweat than acclimatised persons under the same conditions. A daily intake of 15 g. NaCl for manual workers and 6 g. NaCl for sedentary workers is adequate for acclimatised people. Low incidence of hypertension in India is due rather to heavy loss of NaCl in sweat than low NaCl intake.

351. Marcotte-Boy, G., Henry, R. and Issartel, R. Estimation of urinary hexosamine. BULL. SOC. CHIM. BIOL. (Paris) 41:1485–1496 (1959). (In French)

The hexosamine content of normal urine may be separated into 3 fractions, a dialysable fraction, a fraction which can be prepared by 76 percent aqueous ethanol and a fraction which can be prepared from the ethanolic supernatant by $CaCl_2$. In normal subjects, the relative proportions of these fractions are constant.

352. Markham, R. L., Jacobs, J. H. and Fletcher, E. T. D. Zone electrophoresis of serum and urine at pH 4.5 and its application to isolation and investigation of mucoproteins. J. LAB. CLIN. MED. 48:559–570 (1956).

Zone electrophoresis on filter paper at pH 4.5 enables 2 mucoprotein fractions – M1 and M2 – to be isolated in serum and urine. In both serum and urine, the mucoprotein fractions form a part of the α_1 and α_2 fractions on electrophoresis at pH 8.6. Two fractions occur in urine with mobilities at pH 4.5 > that of M1 and their positions in the pattern at pH 8.6 are demonstrated. A method is suggested for the semiquantitative estimation of the mucoproteins of serum based on their isolation by zone electrophoresis and subsequent staining. In pathological serum and urine both mucoprotein fractions show marked heterogencity, but in normal serum, M1 appears to consist of one component.

353. Marks, V. Improved glucose-oxidase method for determining blood, c.s.f. and urine glucose levels. CLIN. CHIM. ACTA 4:395–400 (1959). (In English)

This method uses glucose-oxidase and peroxidase, and is simple, rapid, and accurate. Glucose and non-glucose reducing fractions were compared before, during, and after insulin, showing that non-glucose reducing substances in blood are diminished by insulin over a prolonged period.

354. Marquardt, P. and Meyer, H. J.
Diagnosis of phaeochromocytoma. MUNCH.
MED. WSCHR. 100:899–901 (1958).
(In German)

Methods for and results of determinations of catechol amines in urine are discussed.

355. Marrian, G. F.
Newly discovered urinary oestrogen metabolites.
ACTA ENDOCR. (Copenhagen) 24(31):27–29 (1957).
(In English)

356. Marrian, G. F.
Urinary oestrogens and their quantitative
determination. CANCER, N. Y., 10:704–706
(1957).

A review.

357. Martin. H. E. and Jone, R.
Effect of ammonium chloride and sodium
bicorbonate on urinary excretion of magnesium,
calcium and phosphate. AMER. HEART J.
62:206–210 (1961).

Six normal subjects showed mean or average increases which were significant in urinary output of Mg (+ 4.99 mequiv.). Ca (+ 22.86 mequiv.) and phosphate (+ 18.2mM) during 5 days of ingestion of NH_4Cl (8 g.). During ingestion of $NaHCO_3$ (8 g.) there was a mean decrease over the control period which was statistically significant only for urinary output of Ca (-3.81 mequiv.).

358. Mattace, R. F., Santamaria, R., Sarto, G.
[Denaturation of proteins by urea at an elevated
pH] BOLL. SOC. ITAL. BIOL. SPER.
35:840–844, 31 Jul 1959. (In Italian)

359. Matsch, E. and Graf, F.
Estimation of p-hydroxypropiophenone in urine.
BULL. SOC. CHIM. BIOL. (Paris)
39:641-645 (1957). (In French)

A colorimetric method for the estimation of p-hydroxypropiophenone based on Molisch's reaction (α-naphthol and concentrated H_2SO_4) is described. The method is suitable for studies of reabsorption and excretion.

360. Mattea, E., et al.
I. Stability of urinary β-glucuronidase [G] during collection of urine and variations in 24 hour output in cases of malignant tumor of the bladder. II. Increase in activity of urinary β-glucuronidase in workers engaged in manufacturing benzidine.
TUMORI 45:229-250 (1959). (In Italian)

I. The stability of the G was shown by the fact that the activity of the enzyme remained unaltered during the day. In cases of malignant tumor of the bladder the G content of the urine is higher than in normal persons.

II. G activity in urine of 8 members of 3 different groups of persons was determined: (1) tumor free workers manufacturing benzidine, (2) workers who had been transferred several years previously from the benzidine department and (3) normal subjects. G activity was markedly increased in those exposed to the aromatic amine while in those no longer exposed it was practically normal. Increased enzyme activity (a) is dependent on the penetration of benzidine in the body (b) is not dependent on the presence of a vesical tumor and (c) precedes the possible occurrence of such a tumor. Some prophylactic and therapeutical aspects of vesical tumors are discussed.

361. Mattice, M. R.
Appendix - Resume of Normal Data. In:
CHEMICAL PROCEDURES FOR CLINICAL LABORATORIES. Philadelphia, Pa.,
Lea and Febiger, 1936. p.403.

Analysis of Normal Sweat

Total Solids	0.04-0.86 percent
Total N	0.3 gm./day
NH_3-N	4.7-6.0 mg./100 ml.
Total Volume	100-500 ml./ day

Analysis of Normal Sweat

NPN	32–67 mgm./100 ml.
Urea N	20 mgm./100 ml.
Amino N]	6–8 mgm./100 ml.
Chloride	4–6 mgm./ml.
pH	6.1–6.6
Sugar	12–20 mgm./100 ml.

Physical Characteristics of Urine and Feces

	Urine	Feces
Percent Water	90 –95	74 –79
pH	5.5– 8.0	7.0 – 7.5
Total Solids		20 –40 gm./24 hr.
Freezing Point	-1.0 to 2.5°C.	

362. Mattox, V. R. and Lewbart, M. L
Determination of aldosterone in urine. J. CLIN. ENDOCR. 19:1151–1161 (1959).

Aldosterone present in urine was determined by acid hydrolysis of the aldosterone conjugate, CHCl extraction followed by successive chromatographic separation from other steroids in (1) formamide-CHCl, (2) formamide-butylacetate-water and (3) ethyl acetate-toluene-benzene-water, and estimation by the color and fluorescent intensity of the spots after alkaline blue tetrazolium treatment of the final chromatogram. Between 5–10 μg. there is 80–90 percent recovery of aldosterone and the determination takes 3 days. The normal values were found to be 2–16 μg. excreted per 24 hours.

363. Mases, F., Falet, R. and Martinot
[Contribution to the study of the urinary elimination of creatine during activity and rest] CONTRIBUTION A L'ÉTUDE DE L'ÉLIMINATION URINAIRE DE LA CRÉATINE AU COURS DE L'ACTIVITÉ ET DU REPOS. – REVUE DE PATHOLOGIE GÉNÉRALE ET COMPARÉE (Paris) 56:641–642, Apr 1956. (In French)

Young men between 21 and 23 years of age showed an increase in the hourly urinary excretion of creatine during periods of exercise. Untrained subjects displayed a greater increase in creatine excretion than trained subjects. Nyctohemeral variations studied in one subject (diurnal activity 6–21 hours, sleep 21–6 hours) revealed a constant and progressive increase in the hourly urinary elimination of creatine during the period of activity, and a decrease during the period of rest.

364. Maske, H.
Test for vitamin B_6 dificiency. Quantitative estimation of xanthurenic acid in urine following administration of DL-tryptophan. KLIN. WSCHR. 35:561–565 (1957). (In German)

A method for the estimation of xanthurenic acid in urine is described as well as a qualitative paper-chromatographic test. Urinary excretion of xanthurenic acid was determined in 170 patients following the feeding of 5 or 10 g. of DL-tryptophan. The normal urinary excretion of xanthurenic acid is variable and in the test the estimations were carried out on the total morning urine specimen, the tryptophan being given the previous evening. Following the high dose of tryptophan the normal maximum excretion of xanthenuric acid was 40–50 mg. but following the low dose it was 25–30 mg. In 12 patients with various disorders in which vitamin B_6 dificiency was likely the excretion of xanthenuric acid following 10 g. of DL-tryptophan was > normal, ranging from 51 to 196 mg.

365. Maslennikova, E. M. and Gvozdova, L. G.
Determination of riboflavin in urine. VOP. PITAN. 2:25–27 (1956). (In Russian)

Instead of fluorometry it is recommended to titrate under an ordinary mercury-quartz lamp with a Wood filter – which can be done in any clinical laboratory. A sensitivity of 0.1 μg. is claimed, with an accuracy of ± 10 percent.

366. Masson, M.
Determination of urinary catechol amines. REV. FRANC. ETUDES CLIN. ET BIOL. 5:306–308 (1960). (In English)

Details are given on a colorimetric chemical method modified from de Gennes, et al. [Presse med. v. 66, 805 (1958)]. The pH must be carefully controlled electrometrically for accurate results. Catechol amines in urine may be assayed by determining their effect in elevating the blood pressure of animals. The colorimetric method employed is less specific than fluorimetric techniques, but the results are accurate enough for the diagnosis of pheochromocytoma.

367. Melo, E. H. L., et al.
Protein, hexose, and hexosamine in non-dialysable fraction of filtered urine in normal young men.
J. LAB. CLIN. MED. 54:739–745 (1959).

Three main fractions were obtained: (1) a carbohydrate not bound to protein, which has been tentatively identified as a mucopolysaccharide; (2) a protein-bound carbohydrate which is probably a mucoid or a mucoprotein; and (3), a protein and carbohydrate bound to protein.

368. Melo, E. H., et al.
[Comparison between serum and urine mucoids in regard to the protein, hexose and hexosamine content in normal young men] REV. PAUL. MED. 57:381–385, Dec 1960. (In Portuguese)

369. Menache, R.
Simple micro method for estimation of uropepsin in urine. BULL. SOC. CHIM. BIOL. (Paris) 41:175–180 (1959). (In French)

The tyrosine method for uropepsin estimations was modified to a micromethod which is simple and rapid. Some normal and pathological results are given.

370. Mendelson, J., et al.
Catechol amine excretion and behavior during sensory deprivation. A.M.A. ARCHIVES OF GENERAL PSYCHIATRY. 2:147–155, Feb 1960.

The effects of sensory deprivation on urinary epinephrine and norepinephrine excretion were studied in 10 adult male volunteer subjects. The combined group data revealed a rise in epinephrine and norepinephrine excretion during the experiment, with a fall toward control values during the post-experimental period. There was wide individual variation in the endocrine response, five categories being differentiated. Behavioral measures made during the experiment included length of stay in the experiment, mental experiences, motor activity, amount of verbalization, somatic references, and judgment of passage of time. The relevance of these findings to previous studies and the problems of relating biochemical indices to behavioral assessments are discussed.

371. Meulemans, O.
Phenylpyruvic acid in urine. CLIN. CHIM.
ACTA 5:48–53 (1960).

The method by which phenylpyruvic acid was estimated quantatitively, by measuring the green color with $FeCl_3$, was modified. The extinction was measured after the green color with $FeCl_3$ has faded, and this value is subtracted from that found initially. This method is more accurate, and lower values of phenylpyruvic acid can be measured.

372. Muelemans, O.
Ferric chloride test for phenylpyruvic acid in
urine. CLIN. CHIM. ACTA 5:152–153 (1960).

A demasking agent, a mixture of Mg and NH_4Cl and NH_3, is added to the urine to precipitate phosphates which tend to mask the $FeCl_3$ reaction. The alkaline urine filtrate is then acidified and the $FeCl_3$ added. The green color of the positive action can then be seen if phenylpyruvic acid is present.

373. Migeon, C. J., et al.
Diurnal variation of plasma levels and urinary
excretion of 17-hydroxycorticosteroids in normal
subjects, night workers, and blind subjects.
J. CLIN. ENDOCR. 16:622–633 (1956).

The maximum plasma level was regularly seen in normal subjects at about 6 a.m. from which time a steady decline occurs until about midnight, when the concentration rises rapidly during the next 6 hours. The urine levels were parallel but delayed by about 2 hours. Night workers and the blind showed the same pattern. Plasma Fe concentrations follow the same periodicity, but 2 hours later, except in the blind group in which the relationship was less distinct. An inverse cycle appeared to exist for eosinophil concentration, but the variations were too great to be able to attach certain significance to this.

374. Mikolajczk, W. and Sadowski, Z.
[Specific gravity and osmotic concentration of
urine] POL. ARCH. MED. WEWNET.
31:489–494 (1961). (In Polish)

375. Moolenaar, A. J.
New method for colorimetric determination of aldosterone in urine. ACTA ENDOCR. (Copenhagen) 25:161-172 (1957).

The method for $CHCl_3$ extraction, chromatographic isolation, and determination of aldosterone using its reaction with 2 : 4-dinitrophenylhydrazine is detailed.

376. Morato-Manaro, J., Cervino, J. M. and Maggiolo, J.
Method of determining interstitial-cell stimulating hormone in urine: some results in normal and pathological cases. In: CIBA FOUNDATION COLLOQUIA ON ENDOCRINOLOGY. HUMAN PITUITARY HORMONES. Ciba Foundation, 1959, v.13, p. 238-250.

377. Morgan, P. J.
Identification of small amounts of bases in urine by infra-red spectrophotometry. ANALYST 86:631-636 (1961).

378. Morris, R.
Pregnanetriol in urine: determination at 17-KS. ACTA ENDOCR. (Copenhagen) 32:596-605 (1959).

A new method for the determination of pregnanetriol in urine is described depending on the oxidation of pregnanetriol glucuronide to aethiocholanolone and its measurement as a Zimmerman chromogen after chromatography on silica gel.

379. Moser, R. H.
An atlas of urinary sediments. II.
WHAT'S NEW 226:28-31, Oct-Nov 1961.

380. Moulierac, L. and Sais, J.
[The role of static muscular work in fatigue of the fighter pilot: attempted determination of muscular fatigue by Donaggio's reaction]
IMPORTANCE DU TRAVAIL MUSCULAIRE STATIQUE DANS LA FATIGUE DU PILOTE DE CHASSE; ESSAI DE DOSAGE DE LA FATIGUE MUSCULAIRE PAR LA RÉACTION DE DONAGGIO. - MÉDECINE AÉRONAUTIQUE (Paris) 9:145-152 (1954). (In French)

Static muscular exertion is a major cause of fatigue in figher pilots and is largely determined by postural factors, such as the pilot's seating position, as well as by external factors such as acceleration. Donaggio's reaction (precipitation of thionine in the presence of ammonion molybdate in a urinary specimen) is recommended for the determination of the degree of fatigue following muscular work. In spite of the very limited number of case studies conducted so far, it could be established by this method that the degree of muscular fatigue (e.g., fatigue experioenced in the course of firing maneuvers) seems to vary with the amount of training received by the pilot. Static contractions of muscle groups of the neck and of the spinal column in response to acceleration may eventually induce clinical symptoms and deformities.

381. Moxham, A. and Nabarro, J. D. W.
J. CLIN. PATH. 9:351-357 (1956).

Modifications of the Reddy-Jenkins-Thorn and Norymbershi methods for 17-ketogenic steroids and 17-hydrocorticoids are described.

382. Moya, F.
Hyperglyaemic activity of normal human urine.
ENDOCRINOLOGY 57:322–328 (1955).

The i.v. administration of pancreatin or an α-amylase of bacterial origin was found not to affect the blood sugar of the rabbit. They induce an increase in the amount of reducing matter released into the medium by rabbit liver slices incubated in vitro. A urinary extract previously found to be hyperglycaemic and glycogenolytic appears to stimulate in vitro glycogenolysis, not through an intracellular mechanism but by the action of urinary amylase on glycogen that has escaped from the cells into the medium. The urinary extract has a hypotensive effect on the rabbit. The hyperblycaemia following the administration of the urinary extract can be completely inhibited by the adrenolytic drug Hydergin. Normal human urine extracts prepared by Meduna's method were shown to be hyperglycaemic, hypotensive, and inhibited in their hyperglycaemic action by Hydergin.

383. Moya, F., Szerb, J. C. and Macintosh, M.
Identification of a hyperglycaemic factor in urine.
CANAD. J. BIOCHEM. PHYSIOL. 34:563–570
(1956).

The precipitate obtained by adding two volumes of ethanol to acidified urine is hypotensive and hyperglycaemic when injected into a rabbit. It appears that the active principle is kallikrein.

384. Moyer, J. H., Morris, G. and DeBakey, M. E.
Hypothermia on renal haemodyamics and on
excretion of water and electrolytes in dog and man.
ANN. SURG. 145:26–40 (1957).

In dogs undergoing hypothermia to 27° the mean blood pressure [B.P.] fell to 75 percent of the control levels. At the same time there was a fall in both renal blood flow [R.B.F.] and glomerular filtration rate [G.F.R.] without change in urine or Na excretion. Infusion of noradrenaline improved the B.P. but not the R.B.F. or the G.F.R. Increase in temperature to control levels resulted in return of B.P. to normal and of R.B.F. and G.F.R. to about 75 percent of normal. R.B.F. and G.F.R. returned to normal in about 24 hours. Essentially similar changes occurred in 11 humans undergoing hypothermia for vascular operations.

385. Murphy, C. W
Absence of increased corcicoid excretion with stress of perceptual deprivation. CANAD. J. BIOCHEM. PHYSIOL. 33:1062–1063 (1955).

Visual and tactile perception is reduced for 1–6-1/2 days in male subjects. Some subjects became overtly distressed in this period. No variation beyond normal limits could be detected in the urinary output of 11-oxycorticoids.

386. McArdle, B.
Determination of pyruvic and α-oxoglutaric acids by paper chromatography in blood, urine, and cerebrospinal fluid. BIOCHEM. J. 66:144–148 (1957).

The method is described. The amounts of pyruvate and α-oxoglutarate in post absorptive blood and urine from healthy humans and in c.s.f. from patients with neurological disease are given. A striking feature is the low level of α-oxoglutarate in c.s.f. as compared with that of blood. A woman excretes almost twice as much urinary α-oxoglutarate as does a man.

387. McArthur, J. W., Ingersoll, F. M. and Worcester, J.
Urinary excretion of interstitial-cell stimulating hormone [ICSH] by normal males and females of various ages. J. CLIN. ENDOCR. 18:460–469 (1958).

An assay method was used that depends on the repair of ventral prostatic atrophy in the hypophysectomised immature male rat. ICSH was barely detectable in the urine of 3 pre-pubertal children. In 5 adult females, ICSH activity was detected in mid-cycle, and in 3 of the subjects, during the follicular and luteal phases as well, 16 out of 17 adult males showed ICSH activity; males appeared to excrete appreciably more ICSH than adult females, except when the latter were in the mid-cycle peak phase. In 10 post-menopausal women the rate of excretion of ICSH was higher than that observed in any other group of either sex. The increases in testicular and ventral prostatic weight were produced by the same dose of urine concentrate in most cases, suggesting a rough equivalence between the amounts of FSH and ICSH excreted.

388. McDonald, D. F. and Murphy, G. P.
Bacteriostatic and acidifying effects of methionine, hydrolyzed casein and ascorbic acid on the urine.
NEW ENGL. J. MED. 261:803–805, 15 Oct 1959.

389. McEvoy-Bowe, E. and Lugg, J. W. H.
A direct quantitative paper chromatography of amino acids and its application to urinary excretions of some human ethnic groups. BIOCHEM. J. 80:616–623 (1961).

By closely controlling chromatographic and color-development conditions, the optical properties of the color bands on two-dimensional paper-sheet partition chromatograms of amino acids treated with ninhydrin become markedly reproducible. 'Minimum transmission' densitometry of the bands is carried out with a special instrument which eliminates the effects of sheet textural irregularities, and the band transmittances are corrected for 'background'. Applied to analysis of desalted human urines the procedure has furnished reliable values for rates of excretion of glycine, taurine, β-aminoisobutyric acid, alanine and glutamine by male memebers of three ethnic groups. Cystine excretion rates were estimated polarographically.

390. McMillan, M.
Urinary excretion of individual catechol derivatives studied by a chemical method. LANCET i:715–718 (1957).

A chromatographic method is described for the separate assessment in urine of noradrenaline, adrenaline, hydroxytryptamine, and dihydroxyphenylacetic acid.

391. Nachlas, M. M. and Blackburn, R.
Colorimetric determination of urinary lipase.
J. BIOL. CHEM. 230:1051–1061 (1958).

The method employs a new chromogenic substrate, naphth-2-yl caprylate; the liberated naphth-2-ol is coupled with tetrazotised di-o-anisidine and the color density of the resulting soln, is determined colorimetrically. Urine contains an antilipase, and this inhibitor is separated from the enzyme only by dialysis. Urinary and pancreatic lipase are probably identical.

392. Naftalin, L. and Mitchell, L. R.
New urine preservative. CLIN. CHIM. ACTA
3:197–200 (1958). (In English)

A new preservative, thymol dissolved in isopropanol, will keep urine 'fresh' and free from ammoniacal and other bacterial breakdown products for over 48 hours at room temperature. Thymol (5 ml. of 10 percent w/v solution in isopropanol per 24 hours urine collection) is used. Hay's test and the Zimmerman reaction cannot be performed in the presence of this preservative.

393. Natusch, R.
[On a study of urine sedimentation] Z. AARZTL.
FORTBILD. 55:1018–1023, 1 Sep 1961.
(In German)

394. Neher, R. and Wettstein, A.
Physiochemical estimation of aldosterone in urine.
J. CLIN. INVEST. 35:800–805 (1956).

A detailed description for the determination of aldosterone in urine.

395. Norymberski, J. K. and Stubbs, R. D.
Indrect analysis of corticosteroids. III. Determination of steroidal dihydroxyacetones. IV.
Role of chloride and urea in the bismuthate treatment of urines. BIOCHEM. J. 64:168–175,
176–178 (1956).

III. Zinc powder in boiling aqueous acetic acid reductively removes the keto group in 4 : 5-unsaturated-3-oxosteroids, the 17- and 21-hydroxy group in 17 α : 21-dihydroxy-20-oxosteroids and the 21-acetoxy group in 21-acetoxy-17 α-hydroxy-20-oxosteroids. 17-ketones, 17 : 20-diols, and 17 : 20 : 21-triols are unaffected. A method, based on these results, is described for the differential determination of "zinc resistant" and "zinc labile" 17-ketogenic steroids.

IV. The system sodium abismuthate-NaCl-dil. acetic acid oxidises 17-hydroxy-androstanes to 17-ketones; the oxidation is inhibited by urea. Treatment of human

urine with sodium bismuthate-acetic acid, followed by reductive removal of excess of reagent and then treatment with hot HCl does not oxidise 17-hydroxyandrostanes to 17-ketones or destroy the 17-ketones. The failure of urinary chloride to induce these reactions is due to the inhibitory effect of native urea.

396. Nothman, M. M., Pratt, J. H. and Callow, A. D. Urinary lipase. III. Diagnositc value of urinary lipase. ARCH. INTERN. MED. 199:221–227 (1957).

The urines of 463 persons either healthy or diseased had a lipase concentration of 0.75 units or less. Most of those who had raised values of this enzyme (1.0 to 3.5 units) had symptoms pointing to pancreatic disease. In 15 cases of carcinoma of the pancreas the values were in the normal range, but there was no response of the gland to stimulation with secretin and this is of value in the diagnosis of the disease.

397. Nowaczynski, W., Koiw, E. and Genest, J. Chemical method for determination of urinary aldosterone. CANAD. J. BIOCHEM. PHYSIOL. 35:425–443 (1957).

The crude neutral residue obtained after the hydrolysis and extraction procedure was fractionated on a silica gel column. The portion eluted by $CHCl_3$-acetone 1 : 1 v/v contains the corticosteroid fraction including aldosterone and is used for further paper chromatographic purification. Characterisation of the substance as aldosterone is based on the mobilities in the three chromatographic systems used, on the u.v. absorption curve, on agreement between the values obtained by u.v. absorption and by blud tetrazolium reaction, and by the typical chromogen spectra in concentrated H_2SO_4 and in 100 percent H_3PO_4.

398. Nowarytko, Y. and Sarneck-Keller, M. Chromatographic analysis of urine amino acids. ACTA BIOCHIM. POLON. 3:309–320 (1956). (In Polish)

Amino acid content of normal and pathological human urine was investigated by one dimensional paper chromatography (isatin development). The urine was desalted by ion exchange chromatography (Zeobarb 225). Treatment of the resin with 2N ammonia removes the amino acids the metallic cations remaining on the resin. The amino acids were then freed from ammonia by repeated evaporation to dryness under vacuum at 37°.

399. Oakley, B. W.
AN INVESTIGATION OF THE URINARY EXCRETION OF ENDOGENOUS CREATININE FROM A GROUP OF MALE HUMAN SUBJECTS.
Atomic Energy Research Establishment (Gr. Brit.) AERE rept. no. Med/R. 2098; HD2475) Nov 1956, 9p. ASTIA AD-129 611.

400. Osmond, D. G., et al.
Differential haemopoietic response of rat and guinea pig to extracts of human urine. BRIT. J. HAEMAT 7:281–284, Jul 1961.

401. Otaguro, K.
[Quantitative studies of leukocytes in urine]
UROL. INT. (BASEL) 10:340–349 (1960).
(In German)

402. Pai, M. L.
Urea clearance test in normals. J. ANIM. MORPH. PHYSIOL. 5:68–73 (1958).

Standard urea clearance of 7 normal healthy males averaged 43.3 c.c.; maximum urea clearance of 11 similar subjects averaged 54.3 c.c. Blood urea clearance, both standard and maximum is lower in normal Indians [I] than normal Westerners [W]. Blood urea is more or less the same in both I and W and urinary urea is lower in I than in W. This may be due to lower dietary protein intake of I or different vegetarian composition of the diet of I, and it may be the factor responsible for the lower urea clearance.

403. Pain, S. K. and Banerjee, S.
Studies on the nitrogenous constituents of urine in normal subjects and in patients suffering from cirrhosis of liver, subacute nephritis and hypertension. INDIAN J. MED. RES. 45:35–39 (1957). (In English)

Normal Bengalees had a mean total urinary N excretion of 7.8 g. daily; the patients had a lower total N excretion. The relative proportions of 7 nitrogenous fractions are given for normal and diseased subjects.

404. Parizek, J., et al.
Deoxycytidine in urine as indicator of changes after irradiation. NATURE 182:721–722 (1958).

Urinary deoxycytidine excretion of Wistar male rats was correlated with the irradiation dose. Damage could be detected earlier and much more simply than with other methods. Excretion of deoxycytidine could be demonstrated after low irradiation doses.

405. Passmore, R. and Johnson, R. E.
Modifications of post-exercise ketosis (the Courtice Douglas effect) by environmental temperature and water balance. QUART. J. EXP. PHYSIOL. 43:352–361 (1958).

Urinary ketone-body excretion rates of young men were always greater after than during a 2.5 hour walk at 6.7 km./hr. Ketosis (defined as ketonuria > 5 μmol./min.) occurred in 9 of 20 experiments, 6 of these occurrences being in a cool environment. Ketosis was greatest when water balance was positive and was suppress by large negative water balance.

406. Paupe, J.
Cutaneous elimination of calcium in perspiration.
C. R. SOC. BIOL. (Paris) 152:424–427 (1958).
(In French)

The Ca content of 115 samples of sweat taken from 98 subjects of varying age from the suckling infant to the adult shows appreciable concentration especially in the suckling child. The concentration ranges from 30–300 mg./1., but it appears that the total decreases with an increase in the quantity of sweat produced. The elimination is not influenced by age, and is independent of Ca in the urine and calcaemia.

407. Pecile, A.
New methods of extraction of urinary gonadotrophic substances. ATTI. SOC. LOMBARDA SCI. MED. BIOL. 121–125 (1959).
(In Italian)

408. Pelzer, H., Staib, W. and Ott, D.
Isolation and identification of urinary 17-ketosteroid glucuronides by combined electrophoretic and chromatographic method. HOPPE-SEYLERS Z. PHYSIOL. CHEM. 312:15–21 (1958). (In English)

409. Pentz, E. I.
Test for determination of taurine in urine.
J. BIOL. CHEM. 228:433–445 (1957).

A colorimetric method for the determination of taurine in urine is described. Samples of the hydrolysed and unhydrolysed male urine contained 233.5 and 211 6 mg./24 hr. of taurine.

410. Pentz, E. I., Moss, W. T. and Denko, C. W. Factors influencing taurine excretion in human subjects. J. CLIN. ENDOCR. 19:1126–1133 (1959).

A period of high protein intake did not significantly affect the daily urinary taurine excretion, which averaged in a normal male maintained on an ordinary diet, 161 mg./ 24 hr. During the treatment of 6 patients with suspected or known adrenocortical disorders with ACTH or 9 α-fluorohydrocortisone, there was an increase in urinary excreted taurine, although there did not appear to be a correlation between chronic disease and taurine excretion.

411. Perry, H. M., Perry, E. F. Normal concentrations of some trace metals in human urine: changes produced by EDTA. J. CLIN. INVEST. 38:1453–1463 (1959).

A method for simultaneous assay of Zn, Cd, Mn, Pb, V, Mo, Ni, Ag and Sn by spectroscopy is described and mean concentration over 24 hours of each metal are given for 24 normal adults. Day to day variations and changes accompanying basic, acid dilution and concentrated urine are reported for one adult. The di-sodium, Ca derivative of EDTA given to hypercholesterolaemic patients produced marked increases in urinary ZN and lesser decreases in Ca, Mn, Pb and V.

412. Pignard, P. and Delga, J. Concentration of Mg in blood serum and urine. C. R. SOC. BIOL. (Paris) 152:729–730 (1958). (In French)

413. Pirlet, K. [A method for continuous registration of skin water loss in small skin areas] PFLUEGER ARCH. GES. PHYSIOL. 273:182–189 (1961). (In German)

414. E. Pitkänen
Determination and excretion of adrenaline and noradreanline in urine. ACTA PHYSIOL. SCAND. 38(129):1–98 (1956). (In English)

An experimental study incorporating a review of the determination of adrenaline and noradreanline in urine; of the insulin-induced urinary output of adrenaline in rates; and the determination of the hormones in the urine in the diagnosis of phaeochromocytoma.

415. Plantin, L. O. and Birke, G.
Occurrence of 11-hydroxyaetiocholanolone in urine. ACTA ENDOCR. (Copenhagen) 19:8–10 (1955). (In English)

An improved method is described for separating steroids by acetylation before re-chromatography on aluminum oxide and identification by i.r. spectrography. This allowed the identification of aetiocholane-3α : 11 β-diolπ17-one in the urine of cancer patients, as well as in that of normal men and women and patients with rheumatoid arthritis and cirrhosis of the liver.

416. Plantin, L. O., Diczfalusy, E. and Birke, G.
Estimation of corticosteroid metabolites in urine. ACTA CHEM. SCAND. 10:1059–1060 (1956). (In English)

417. Ploug, J. and Kjeldgaard, N. O.
Isolation of a plasminogen activator (urokinase) from urine. ARCH. BIOCHEM. BIOPHYS. 62:500–501 (1956). (In English)

418. Plough, I. C. and Consolazio, C. F.
The use of casual urine specimens in the evaluation of the excretion rates of thiamine, riboflavin and N^1-methylnicotinamide. J. NUTR. 69:365-370, Dec 1959.

A man's urinary excretion of thiamine or riboflavin per 6 hours can be predicted from the excretion per gram of creatinine within limits of plus or minus 30 to 40 percent. The limits are larger for N^1-methylnicotinamide. The predictability is affected by variations in body size, by diurnal variations in creatinine excretion, and by dietary intake of creatinine. The predictability is more accurate with fasting urine specimens. It is concluded, however, that for surveys of large groups of individuals the measurement of vitamin excretion rate per gram of creatinine in casual urine speciments is a satisfactory procedure in the biochemical evaluation of nutritional status.

419. Plough, C. and Baker, M.
Maximum physiological concentration of sodium in human urine. J. APPL. PHYSIOL. 14:1036-1038 Nov 1959.

Six apparently normal young men received salt intakes of up to 540 mEq/day, or more, with free access to water. The five subjects who tolerated these high intakes drank enough water to maintain the sodium concentration in the 24-hour urine specimens at a mean of 248 mEq/1. with a range of means in the individual subjects of 240-295 mEq/1. Under these circumstances there was little change in the size of the body fluid compartments. The results indicate that there is a maximum physiological concentration of sodium in the urine, probably in the range of 270-290 mEq/1., which is similar to the 'limiting isorrheic concentration' described by Wolf. (The Urinary Function of the Kidney. New York: Grune, 1950.)

420. Politzer, W. M. and Tucker, B.
Urinary 17-ketosteroid and 17-ketogenic excretion in South African Bantu. LANCET ii:778-779 (1958).

Urinary 17-KS and 17-Ketogenic steroid values were determined in 50 outwardly healthy South African Bantu and in 20 whites. There was no significant difference in 17-KS excretion; but excretion of ketogenic steroids was significantly lower in Bantu men.

421. Portwood, R. P., et al.
Relation of urinary CO_2 tension to HCO_3' excretion.
J. CLIN. INVEST. 38:770–776 (1959).

422. Powell, J.
Evaluation of chloride in sweat: collection by two thermal methods. J. AMER. OSTEOPATH ASSN. 61:381–384, Jan 1962.

423. Pozzi, L.
Column chromatography of urine hydrolysed at different pH, and extracted with various organic solvents. ARCH. SCI. BIOL. (Bologna). 41:295–298 (1957). (In Italian)

424. Praetorius, E.
Uric acid and other purine derivatives.
UGESKR. LAEG. 121:1297–1299, 20 Aug 1959.
(In Danish)

425. Price, J. M. and Brown, R. R.
Quantitative studies on human urinary metabolites of D-, DL-, acetyl-L-, and acetyl-D-tryptophan.
J. BIOL. CHEM. 222:835–842 (1956).

Quantitative analysis of the urine for N-methyl-2-pyridone-5-carboxamide, xanthurenic acid, kynurenic acid, kynurenine, N^a-acetylkynurenine, o-aminohippuric acid, anthranilic acid glucuronide and an unidentified aromatic amine after ingestion of the tryptophans indicated that acetyl-L-tryptophan was absorbed without deacetylation and that it was converted to nicotinic acid to a lesser extent than was L-tryptophan.

426. Price, J. M., Brown, R. R. and Ellis, M. E. Quantitative studies on the urinary excretion of tryptophan metabolies by humans ingesting a constant diet. J. NUTR. 60:323–333 (1956).

Four normal males were fed a constant diet containing 15 mg. nicotinic acid and 900 mg. tryptophan daily and the excretion of metabolites measured. After 2 g. supplementary tryptophan the excretion of N-methyl-2-pyridone 5-carboxamide, kynurenic acid, o-aminohippuric acid and kynurenine were increased. These compounds were presumably major tryptophan metabolites. Minor metabolites were xanthurenic acid, acetylkynurenine and anthranilic acid glucuronide. A constant diet was not necessary for quantitative studies on tryptophan metabolism.

427. Racz, G., Kisgyorgy, Z. and Fuzi, J. Bacteriostatic action of human urine after ingestion of extracts of pear leaves. NATURWISSENSCHAFTEN. 45:342 (1958). (In German)

428. Raftopoulo, R., Staudinger, H. and Weissbecker, L. Determination of corticoids in human urine – review and comparison of existing methods. CLIN. CHIM. ACTA 4:463–483 (1959). (In German)

A review.

429. Reddy, S. K., Reynolds, M. S. and Price, J. M. Determination of 4-pyridoxic acid in human urine. J. BIOL. CHEM. 233:691–696 (1958).

4-Pyridoxic acid (3-hydroxy-5-hydroxymethyl-2-methylpyridine-4-carboxylic acid) in urine is determined fluorimetrically after removal of interfering fluorescent compoinds by ion exchange chromatography on Dowex 1 (Cl) and Dowex 50 (H). This treatment removes 40–70 percent of the fluorescence, which is not due to 4-pyridoxic acid. The method is suitable for human urine samples that contain > 2 μmol. of the acid per 24 hours. Approximately 50 percent of a single dose of 10 mg. of pyridoxine

hydrochloride is accounted for by increased urinary 4-pyridoxic acid excretion. After ingestion of the acid, approximately 50 percent is present in the urine, but after s.c. injection it is excreted almost quantitatively within 24 hours.

430. Remington, J. S. and Finland, M.
Precipitating antibody in normal human urine.
PROC. SOC. EXP. BIOL. MED. 107:765–770,
Aug–Sep 1961.

431. Reznik, I. B. and Fedorov, G. M.
Methods of determining porphyrin in urine and its
importance in diagnosis. VRACH. DELO
10:977–982 (1955). (In Russian)

A description of a fluorescent method of determining coproporphyrin in urine, a modification of the Langen and Berg method (Acta med. scand., 1958, 137, 130). 5 ml. of urine were acidified with glacial acetic acid to litmus, shaken up with 5 ml. of ether and the fluorescence of the ether layer as observed in u.v. light. Experiments on rabbits showed that the intramuscular injection of a 1 percent solution of $Pb(NO_3)_2$ resulted in porphyrinuria which was clearly discernible by using the method described, even before the onset of other symptoms of poisoning. The determination of coproporphyrin in human urine (226 cases) showed that porphyrinuria, discovered by this method, occurs in 18.7 percent of people whose work brings them into contact with Pb preparation and only in 1.7 percent of persons who are not, in contact with Pb. This method is useful for an early diagnosis of Pb poisoning.

432. Richardson, E. M., Bulaschenko, H. and
Dohan, F. C.
Urinary excretion by man of 11β : 17α:
20α-21-tetrahydroxy-4-pregnen-3-one and
the 20β epimer. J. CLIN. ENDOCR.
18:1399–1406 (1958).

433. Robinson, K. W. and Macfarlane, W. V. Urinary excretion of adrenal steroids during exercise in hot atmospheres. J. APPL. PHYSIOL. 12:13–16 (1958).

With moderate exercise both 17-ketosteroids and 17-ketogenic steroids decreased more than 50 percent. Urinary Na decreased and K/Na increased. The rate of urine flow was not related to plasma antidiuretic substance. In one subject exercised to exhaustion the initial steroid fall was followed by a marked rise.

434. Robinson, S. and Robinson, A. H. Chemical composition ofsweat. PHYSIOL. REV. 34:202, Apr 1954.

The seating rate varies from 2–8 liters for soldiers carrying on moderate activity to 10–12 liters for desert workers. Sweat was collected in various ways. Components w which were noted include: NaCl, Na, Cl, K, Ca, Mg, Cu, Mn, SO_4, Fe, I, F, Br, lactic acid, glucose, N, urea, NH_4, creatinine, uric acid, amino acids, phenol, and histamine. The pH ranged from 4 to 6.8.

435. Rodnight, R. Separation and characterisation of urinary indoles resembling 5-hydroxytryptamine and tryptamine. BIOCHEM. J. 64:621–626 (1956).

The indole bases in urine are studied by chromatography on Zeo-Karb 226, elution with acid-ethanol anc concentration of the eluate to 0.002 of ihe volume of urine used. They are then investigated by paper chromatography and tests on guinea-pig ileum. Urine contains two indoles which are probably tryptamine and its 5-hydroxy derivative. Extracts of urine contain no N-methyl-4-hydroxytryptamine or bufotenin. The excretion of urinary "5-hydroxytryptamine" in 12 adults ranged from 45 to 120 μg./24 hr. Similar values are obtained for "urinary tryptamine".

436. Romani, I. D. and Albeaux-Fernet, M.
Chromatographic fractionation of urinary corticoids in normal and certain pathological conditions.
ANN. ENDOCR. (Paris) 17:789-812 (1956).
(In French)

The methods used consist of enzyme hydrolysis, extraction, chromatography on florisil and on paper and color and fluorescence reactions for the identification of steroids. Thirteen α-ketolic catabolites were detected of which six were identified. The catabolites, which were determined quantitatively in several cases, are described in detail.

437. Romani, J. D.
Urinary corticoid metabolites in man. Identification and quantitative study by paper chromatography of aldosterone. C. R. SOC. BIOL.
(Paris) 150:1751-1755 (1956). (In French)

The chromatograms were run in propylene glycol saturated toluene for 55 hours. A standard mixture of aldosterone and hydrocortisone was used to compare with the experimental studies. The RDOC of aldosterone after development with tetrazolium is calculated by the formula,

$$\text{RDOC (aldosterone)} = \frac{\text{Migration c.m. aldosterone} \times \text{RDOC F}}{\text{Migration cm. F.}}$$

(F is taken to be the front). Urine is hydrolysed by the digestive juices of Helix pomatia, or at pH 1.5 by the method of Neher and Wettstein (J. clin. Invest., 1956, 35, 800). The excretion of aldosterone is shown to vary between 3.3-9 μg./24 hr., which is increased in certain pathological conditions with a retention of NaCl.

438. Romani, J. D., Bugard, P. and Fischer, G.
Urinary elimination of α-ketolic corticoids in the normal subject and in chronic fatigue.
Evaluation after enzymic hydrolysis in urines.
C.R. SOC. BIOL. (Paris) 150:1755-1759
(1956). (In French)

This study of urinary corticoids confirms tha the adrenals are disturbed in their functioning by prolonged fatigue. The production of corticosterone is shown to be increased.

439. Romanoff, L. P., et al.
Determination of tetrahydrocortisol [THF] and tetrahydrocortisone [THE] in urine of normal and schizophrenic men. J. CLIN. ENDOCR. 17:777–785 (1957).

A method is presented for the routine estimation of urinary extracts of THF and THE. The output of these two metabolies by normal and schizophrenic men did not differ substantially in 24 hours. The expected dirunal rhythm in the excretion of THE and THF was confirmed. The ratio of the excretions appears to be remarkably constant in men.

440. Romanoff, L. P., et al.
Urinary excretion of β-cortolone (3α : 17α : 20β : 21-tetrahydroxypregnane-11-one) in young and elderly men and women. J. CLIN. ENDOCR. 19:819–826 (1959).

β-cortolone was found as a regularly occurring metabolie in the urine of 20 young and elderly subjects of both sexes. When expressed as a function of creatinine excretion, β-cortolone excretion was not significantly altered by age. It was significantly correlated and proportional to the urinary excretion of tetrahydrocortisol, allotetrahydrocortisol and tetrahydrocortisone.

441. Roscoe, M. H.
Biphasic response of solute excretion to changes in urine flow. ACTA MED. SCAND. 156:277–294 (1957).

The effect of varying urine volume on the excretion rate of Na, Cl, K, P, urea, and of urine osmolarity were studied in 4 subjects, small urine samples being collected at the same time each day for periods of 28 to 42 days. At low urine flow, rate of solute excretion increased approximately linearly with urine flow; at a definite rate of urine flow, fairly constant for different solutes in an individual subject, but varying somewhat from subject to subject, the rate of increase of solute excretion with increasing urine flow fell off though remaining approximately linear. For any given filtration rate, a constant amount of fluid enters the distal tubules; at rates of flow below the critical value there is re-absorption of fluid from the distal tubules and at rates above this value there is secretion of fluid into the distal tubules.

442. Roscoe, M. H.
A comparison of calculated and estimated osmolarities of urine. J. CLIN. PATH. 13:514-517, Nov 1960.

443. Rossi-Fanelli, A., Antonini, E. and Caputo, A.
Effect of urea on oxygen equilibrium of mammalian haemoglobins. ARCH. BIOCHEM. 85:540-549 (1959).

O equilibria of human, horse and sheep Hb all showed progressive decreases in the sigmoid character of the curve and increases in O affinity as the urea concentration was raised to 6.5M. The changes did not seem to be correlated with the apparent splitting of the Hb molecule. Removing the urea by dialysis reversed most of the changes.

444. Rovensky, J. and Toman, M.
A semi-quantitative method for the determination of chlorides in sweat. CESK. PEDIAT. 16:331-335, Apr 1961. (In Czech)

445. Rowe, D. S. and Soothill, J. F.
Serum proteins in normal urine. CLIN. SCI. 21:75-85 (1961).

Siderophilin, γ-globulin and ceruloplasmin were detected in normal, male, human urine at urine/serum ratios, which did not differ systematically from that of albumin; but a high molecular weight $\alpha 2$-globulin and β-lipoprotein were either absent or present only at greatly reduced urine/serum ratios. Material of sedimentation const. 7 could not be demonstrated in normal urine colloid, despite the immunological detection of γ-globulin and other globulins. This implied that some urine globulins were partially degraded.

446. Rowe, D. S. and Soothill, J. F.
Proteins of postural and exercise proteinuria.
CLIN. SCI. 21:87–91 (1961).

Immunochemical studies of urine/serum concentration ratios have shown that proteinuria, induced in healthy subjects by exercise, is only moderately selective to a range of serum protein molecules of different molecular weight, while proteinuria, induced by changes of posture is poorly selective; values for the mean molecular weight of the protein were lower for exercise than for postural proteinuria. Purified albumin, obtained from exercise urine protein, had a molecular weight identical with that of serum albumin.

447. Roy, O. Z.
An electronic device for the measurement of sweat rates. IRE TRANS. MED. ELECTRONICS ME. 7:326–329, Oct 1960.

448. Rubini, J. R., et al.
Urinary excretion of β-aminoisobutyric acid [BAIBA] in irradiated human beings. PROC. SOC. EXP. BIOL. N. Y. 100:130–133 (1959).

BAIBA was found in increased amounts in urine from a group of human beings accidentally exposed to serois radiation. The BAIBA levels excreted appear related to the estimated doses received. Possible metabolic pathways and implications of increased BAIBA excretion are discussed.

449. Sabbadini, E., Savino, L. and Albera, G.
Polysaccharides in urine of normal subjects.
ATTI. SOC. LOMBARDA SCI. MED. BIOL.
14:13–17 (1959). (In Italian)

Determinations were made of the polysaccharides, hexosamines, uronic acids and mucopolysaccharides in samples of urine from 34 healthy men and women between the ages of 18 and 71. There are marked differences in the amounts of the various substances excreted according to the sex and age of the individual.

450. Sabbadini, E., Stoppani, L. and Zilioli, E. On fibrinolytic factors contained in the urine. I. Behavior in normal individuals. ARCH. SCI. MED. (Tor) 112:352, Nov 1961. (In Italian)

451. Sabbadini, E., Stoppani, L. and Zilioli, E. On fibrinolytic factors contained in the urine. II. Behavior in thrombophlebitis and in thrombophilic diathesis. ARCH. SCI. MED. (Tor) 112:357–360, Nov 1961. (In Italian)

452. Saito, S. and Tani, F. Biological characteristics of the crude thyrotropin releasing principle from urine. ENDOCR. JAP. 7:13–18, Mar 1960. (In English)

453. Salomon, L. L. and Johnson, J. E. Enzymic microdetermination of glucose in blood and urine. ANALYT. CHEM. 31:453–456 (1959).

Glucose is oxidised with glucose oxidase and the H_2O_2 produced was used to oxidise o-toluidine in presence of horseradish peroxidase. The chromogen formed absorbs at 365 and 635 mμ. Lower limit is 5 μg./ml.

454. San Martin, M., Prato, Y. and Fernández, L. Excretion of some urinary steroids in the native from the coast and the native at altitude and the changes experienced in the coastal native during his adaptation to altitude. EXCRECIÓN DE ALGUNOS ESTEROIDES URINARIOS EN EL NATIVO DE LA COSTA Y EN EL DE ALTURA Y CAMBIOS QUE EXPERIMENTAN LOS COSTENOS EN SU ADAPTACIÓN A LA ALTURA. ANALES DE LA FACULTAD DE MEDICINA (Lima) 37:736–746 (1954). (In Spanish)

455. Sargent, F., II. Effects of environment and other factors on nutritional ketosis. QUART. J. EXP. PHYSIOL. 43:345–351 (1958).

Healthy young men on a variety of air-crew survival rations and work programs were subjected to 2 weeks of complete starvation or high fat diets and developed ketosis. Ketonaemia and ketonuria were less in summer than in winter and were reduced in the second week of the regimen as well as by increased caloric intake, restriction of water intake and doing lighter work.

456. Sarnoff, S. J., et al. Vasodilator properties of urine. I. Comparison of the effect of human urine and nitroglycerin on coronary resistance and myocardial oxygen consumption in isolated supported heart preparation. II. Reproducibility in blood flow bioassay techniques for vasoactive substances: studies with human urine. III. Comparison of vasodilator activity in the urine of normal individuals and patients with orthostatic hypotension. CIRCULAT. RES. 6:522–537 (1958).

I. In the dog heart preparation, where aortic pressure, cardiac output and heart rate could be independently controlled, addition of normal urine to the blood reservoir increased coronary flow and coronary vascular resistance fell. Comparing the effect of 0.6 mg. nitroglycerin in 10 ml. saline with that of 10 ml. urine showed that the latter was a 2–3 times more potent coronary vasodilator. Neither caused any change in myocardial O_2 consumption of cardiac efficiency at the peak of their effect.

II. Since model experiments suggested that inadequate mixing of the test substance in the external circuit, a reproducible bioassay technique measuring the femoral artery flow in consequence of locally vasoactive material was developed. By adjusting the pentobarbital anaesthesia of the test dog to maintain blood pressure and by observing some other precautions, over 100 individual assays could be performed on one preparation 0.4 ml. dialyzed urine was used for one assay.

III. The vasodilator activity in the urine of 5 hypotensive patients was < 15 percent of that in the urine of 5 normal individuals studied simultaneously. The active substance was non-dialyzable, quick acting, stable during 2-1/2 months storage at -15° and in its chemical characteristics similar to callicrein. An approximate comparison of activity of urine and that of callicrein indicates that, if callicrein was the active substance, it exhibits its activity in 0.2–0.3 μg. amounts. Urines from 9 mammalian species all showed high vasodilator activity. The possibility that the vasodilator substance in the urine may be associated with autonomic function and/or the regulation of blood pressure, is discussed.

457. Satoh, K. and Price, J. M.
Fluorimetric determination of kynurenic acid and xanthurenic acid in human urine. J. BIOL. CHEM. 230:781–789 (1958).

The 2 acids are absorbed on Dowex 50 and are eluted simultaneously by washing the resin with water. The kynurenic acid is rendered fluorescent by treatment with concentrated H_2SO_4, and the xanthurenic acid is determined after treatment with concentrated alkali. The new method is a simplified procedure for kynurenic acid, and is much more specific for urinary xanthurenic acid. Other quinoline derivatives do not interfere.

458. Scaro, J. L.
Erythropoietic action of urinary extracts of subjects living on elevations. C. R. SOC. BIOL. (Paris) 154:2379–2380 (1960).
(In French)

459. Scaro, J. L.
Erythropoietic activity of urinary extracts of subjects living in high altitudes. REV. SOC. ARGENT. BIOL. 36:1–8, Apr–May 1960. (In Spanish)

460. Schmidt, G. W.
Quantitative paper chromatography of amino acids in urine: factors increasing and reducing intensity of stains developed with ninhydrin. Z. GES. EXP. MED. 130:215–220 (1958). (In German)

Increasing alkalinity of the urine reduced the intensity of amino acid stains on paper chromatograms of urine. The intensity of amino acid stains was increased when the urine contained 'Diamox' or when its salt concentration was lowered by treatment with an ion exchange resin.

461. Schmid, R.
Glucuronic acid-conjugated bilirubin as the "direct reacting" bilirubin in serum, urine, and bile. SCHWEIZ. MED. WSCHR. 86:775–776 (1956). (In German)

Bilirubin in bile occurs predominately as the water solution glucuronide. In hepatogenic jaundice this appears in blood and gives the direct van den Bergh reaction and appears in urine. Free bilirubin is almost insoluable in water and only couples with diazotised sulphanilic acid in the presence of alcohol or a similar solvent.

462. Schmid, R.
Direct-reacting bilirubin, bilirubin glucuronide, in serum, bile, and urine. SCIENCE 124:76-77 (1956).

The two forms of bilirubin, one reacting directly with diazotised sulphanilic acid and one reacting only after addition of alcohol, have been separated by conversion to the dipyrromethene diazonium pigments which could be chromatographed on paper using a solvent system of ethyl methyl ketone: n-propionic acid : water in the ratio 75 : 25 : 30. The indrectly reacting form could be converted to the other by hydrolysis with HCl or treatment with β-glucuronidase and proved to be bilirubin glucuronide. In bile, most or all of the bilirubin was in the form of the glucuronide in which 2 molecules of glucuronic acid were conjugated through the α : α' -hydroxy groups of 1 molecule of bilirubin.

463. Schmid, R.
Identification of 'direct-reacting' bilirubin as bilirubin glucuronide. J. BIOL. CHEM. 229:881-888 (1957).

The 'direct-reacting'' water solution bilirubin in serum of jaundiced patients is bilirubin glucuronide' which includes both the mono-and di-glucuronide. In normal bile and urine, most of the bilirubin is present as glucuronide.

464. Schmidt, G. W.
Dependence of urinary amino-nitrogen on urine volume. KLIN. WSCHR. 36:37-39 (1958). (In German)

Urinary amino-N was estimated by the method of Pope and Stevens (Biochem. J., 1939, 33, 1070) on 380 healthy children. No correlation was found between the concentration or absolute amount of amino-N and the urine vol./kg. of body wt./hr.

465. Schmidt-Nielsen, G., O'Dell, R. and Osaki, H.
Interdependence of urea and electrolytes in production of a concentrated urine. AMER. J. PHYSIOL. 200:1125-1132, Jun 1961.

466. Schneider, W. G. and Birtel, A. Significance of an aminosteroid component in gonadotrophin extracts. KLIN. WSCHR. 34:1175-1178 (1956). (In German)

A method of extraction of gonadotrophins from urine and the subsequent electrophoretic separation of an aminosteroid component is described. This fluorescent fraction was separated from 24 hour urine samples in early (56-84th day) and late pregnancy (196-224th day). The activity of the extract was determined by the mouse-uterus test before and after removal of the aminosteroid fraction. In early pregnancy the removal of this fraction reduced the activity of the extract by about 15 percent but in late pregnancy the reduction was about 43 percent. The influence of this fraction on the quantitative estimation of gonadotrophins is discussed. It is suggested that this fraction is derived from the adrenals.

467. Schoen, E. J. Minimum urine total solute concentration in response to water-loading in normal men. J. APPL. PHYSIOL. 10:267-270 (1957).

A quantitative study of the diluting power of the kidneys, based on 31 water-loading experiments in 10 normal men, is reported. A minimum urine total solute concentration [MUC] of 59 mOs/1. was observed, with a range of 37 to 80 mOs/1. The MUC appears to be independent of the size of the water load when the load exceeds a minumum level (1000-1500 ml.). Further increase in water intake only extends the period of minimum urine total solute concentration.

468. Schoen, E. J., Young, G. and Weissman, A. Urinary specific gravity versus total solute concentration: studies in normal adults. J. LAB. CLIN. MED. 54:277-281 (1959).

The measurement of urinary specific gravity as an indication of renal concentrating and diluting ability is valid only as it reflects urinary total solute concentration (osmolarity). A specific gravity < 1.005 may be said to represent a hypo-osmolar urine. In the range 1.005 and 1.020, the specific gravity reading may be misleading as an indication of urinary total solute concentration. Above this value it reflects well the urinary osmolarity.

469. Schön, H. and Lippach, I.
New color reaction for detection of acetone, acetoacetic acid and β-hydroxybutyric acid in blood and urine. KLIN. WSCHR. 34: 1083–1084 (1956). (In German)

The method depends on the formation of the respective 2 : 4-dinitrophenylhydrazones which are extracted with CCl_4 and estimated colorimetrically. The values in normal blood are: acetone and acetoacetic acid 0.1–0.3 mg. percent, β-hydroxybutyric acid 0.2–0.4 mg. percent. In urine (24 hr. specimen) the values are: acetone and acetoacetic acid 1.0–3.0 mg. and β-hydroxybutyric acid 1.0–3.0 mg. and β-hydroxybutyric acid 10.0–30.0 mg.

470. Schrade, W., Böhle, E. and Heupke, G.
Regular occurrence of lipoproteins in the urine of healthy human subjects. KLIN. WSCHR. 34:903–906 (1956). (In German)

A method for the detection and estimation of small amounts of lipoproteins in urine by paper electrophoresis of dialysed urine is described. In 21 subjects the average amount was 2.9 mg. 5 percent which is equivalent to 23.5 mg./24 hr. The analysis gave the following percent composition. Albumin 26.4 α_1-globulin 10.3, α_2-globulin 19.5, β-globulin 31.1, γ-globulin 12.7. The protein-bound lipids were classified into 3 electrophoretically distinct zones, one, the strongest, being assoicated with β-globulin (63.8%), a less intense band with the albumin and α_1-globulin (19.8%) and a further zone being at the starting line (16.4%). The occurrence of phosphatides in the first two fractions was indicated by isotope studies in 1 subject.

471. Schram, E. and Crokaert, R.
Identification of guanidotaurine and carbamyltaurine in urine by means of ion exchange ch chromatography. BULL. SOC. CHIM. BIOL. (Paris) 39:561–568 (1957). (In French)

Guanidotaurine and carbamyltaurine may be separated using ion-exchange chromatography on Dowex 2 and 50 respectively. The effluents from the columns can then be submitted to spectrophotometric analysis. These methods are of considerable value in the detection and estimation of the two compounds in biological fluids such as urine.

472. Schreier, K. and Flaig, H.
Excretion of indole-pyruvic acid in urine of normal subjects and of patients with Follings disease (oligophrenia phenyl-pyruvica). KLIN. WSCHR. 34:1213 (1956). (In German)

473. Schreiner, G. E.
Identification and clinical significance of casts. ARCH. INTERN. MED. 99:356–369 (1957).

Methods for examination of urinary casts are described in detail and a descriptive classification included which is illustrated with photographs of abnormal urinary sediments. The significance of various casts is discussed and clinical correlations made between renal pathology and urinary sediments. The identification of urinary casts is of considerable value in diagnosis, and it is of considerable aid in treatment and prognosis.

474. Schreiner, G. E.
The urinary sediment. CLIN. SYMPOSIA 13:35–48, Apr–Jun 1961.

475. Schüller, E.
Normal excretion of 17-keto-steroids. ACTA ENDOCR. (Copenhagen) 21:281–288 (1956).

A method is given for the assay of 17-ketosteroids in human urine: the analytical error as well as the individual day to day fluctuations are quoted. The average normal excretion and the spreading of the values are calculated from data from 100 male and 125 female normal 24-hour determinations. The output depends on the age and the sex: it is higher in males.

476. Scott, J., Emanuel, D. and Haddy, F. Effect of potassium on renal vascular resistance and urine flow rate. AMER. J. PHYSIOL. 197:305–308 (1959).

In anesthetized laparotomized dogs KCl was infused into the renal artery, the rate of blood flow either held constant or not controlled. Infusion of 0.11–0.69 mequiv. K/min. decreased resistance, but resistance increased when the K was over 0.69 mequiv./min., these relationships being uninfluenced by phentolamine. 0.6 mequiv. K./min. increased urine flow rate both before and after renal denervation, this increase not occurring if blood flow rate was held constant. The dilator action of K on renal vessels is thus probably related to increase in urine flow rate.

477. Scott, R., Jr. and McIlhaney, J. S. Voiding rates in normal adults. J. UROL. 85:980–982, Jun 1961.

478. Scowen, E. F., Hadfield, J. and Donath, E. M. Response of mammary gland of male mouse to progesterone and human mammotrophic substances. J. ENDOCR. 18:26–31 (1959).

Mice of 5 strains primarily insensitive to mammotrophic substances in human urine and anterior pituitary gland were equally sensitive to the mammatrophic action of progesterone. Two insensitive strains became responsive to human mammotrophic substances after progesterone treatment. A sensitive strain, Strong A2, became more sensitive to human whole anterior pituitary after progesterone was given. A human growth hormone preparation elicited a mammotrophic response in the mouse similar to that of human whole pituitary. The major mammotrophic potency of the pituitary was present in the growth hormone fraction.

479. Segar, W. E., Riley, P. A., Jr. and Barila, T. G. Urinary composition during hypothermia. AMER. J. PHYSIOL. 185:528–532 (1956).

An increase in blood pH and decrease in serum K occurred in dogs under thiopental anaesthesia cooled to 22°; haematocrit, serum Na, Cl or total CO_2 concentration were unaffected. Urine flow increased with cooling and the urinary/plasma ratios of Na, K and Cl approached unity while that for creatinine dropped from 150 to 8. The urine produced during cooling was essentially glomerular filtrate which had undergone isomotic reabsorption but had been unaltered by further renal tubular activity.

480. Sellers, A. L. Mechanism and significance of protein excretion by normal kidney. ARCH. INTERN. MED. 98:801–808 (1956).

Glomerular filtration and tubular reabsorption of plasma proteins is part of the normal activity of the mammalian kidney. Metabolic processes in the proximal tubule cells that dealt with this reabsorbed protein are considered. Recent experiments to elucidate the functions of the normal mammalian kidney are reviewed.

481. Seto, T. A. and Schultze, M. O. Determination of trichloroethylene, trichloroacetic acid, and trichloroethanol in urine. ANALYT. CHEM. 28:1625–1629 (1956).

The procedure is a modification of the Fujiwara pyridine-alkali reaction which permits the direct determination of the above substances in urine.

482. Sharp, G. W. G., Slorach, S. A. and Vipond, H. J. Diurnal rhythms of keto- and ketogenic steroid excretion and adaptation to changes of the activity-sleep routine. J. ENDOCR. 22:377–385 (1961).

A study of the adaptation of the diurnal rhythm of keto- and detogenic steroid excretion to a reversed activity-sleep and light-darkness schedule, was undertaken on 4 human subjects, living under standardized conditions of diet, activity and lighting in Sptizbergen, where 24 hour daylight persists in summer. Adaptation of the ketosteroid

rhythm was found to occur in 2 days and that of the ketogenic steroid rhythm in 8 days. Possible reasons for, and significance of, these results are discussed.

483. Sharp, G. W.
Persistence of the diurnal rhythm of flow of urine.
NATURE 193:37-41, 6 Jan 1962.

484. Shatalova, A. A. and Meerov, G. I.
Quantitative radiometric assay of hippuric acid in urine. BIOKHIMIIA 26:444-447 (1961).
(In Russian)

A method is suggested for determining hippuric acid in urine using [14C] hippuric acid. The method could be used in medical practice for studying liver function.

485. Shaw, E. I. and Goldsby, R.
Chromatographic techniques for separation of iodinated thyroid products from human urine.
INT. J. APPL. RADIAT. 3:161-165 (1958).

486. Shaw, K. N. F. and Trevarthen, J.
Effect of atmospheric contaminants on paper chromatography of urinary indole and phenol acids. NATURE 182:664 (1958).

Diminished color intensity and a brown discoloration in the reaction between p-dimethylaminobenzaldehyde seemed to be correlated with the incidence of 'smog'. One set of 2-dimensional chromatograms of urine extracts revealed faint brown spots (instead of blue) of only 5-hydroxyindoleacetic acid. A duplicate set, dried in a stream of air previously passed through a charcoal filter, revealed 14 indole derivatives. The role of ozone and organic peroxides are discussed.

487. Shaw, K. N. F. and Trevarthen, J.
Exogenous sources of urinary phenol and indole acids. NATURE 182:797–798 (1958).

The urinary indole and phenol acids of 2 adults placed on a high-protein diet from which materials of plant origin were excluded and who ingested bananas and coffee respectively were investigated by means of 2-dimensional paper chromatography. After ingestion of bananas urinary 5-hydroxyindoleacetic acid increased sharply in the first 7 hours but soon returned to normal; the excretion of indoles no. 14 and 15 also increased. The same m-hydroxyphenyl and 3-methoxy-4-hydroxyphenylacids which were excreted after coffee also were detected in urine extracts after ingestion of caffeic or ferulic acids. Vanillic acid and other related exogenous 3-methoxy-4-hydroxyphenyl acids were also present.

488. Sheath, J. B.
Factors in colorimetric estimation of 17-KS in urine. AUST. J. EXP. BIOL. MED. SCI. 37:133–146 (1959).

The colorimetric determination of neutral 17-KS in urine using the Zimmerman reaction was investigated with reference to the purity of reagents hydrolysis of urine, optimal times and temperature and to the absorption spectra of pure steroids and ketonic and other urinary extracts. Formalin treatment of the urine prior to enzymic hydrolysis removed interfering chromogens and thus obviated the necessity for using a correction formula.

489. Sheath, J. B.
Chromatography of urinary ketosteroids. AUST. J. EXP. BIOL. MED. SCI. 37:147–152 (1959).

The rapid separation of androsterone, androstenedione, dehydroisoandrosterone, adrenosterone, 11β-hydroxy-Δ^4-androstene-3, 14-dione and 11β-hydroxytestosterone was possible on ethanol-extracted Whatman No. 2 paper using the solvent system petroleum ether (40–60 b.p.)/H_2O/purified methanol 2/1/1. The aqueous layer was the stationary phase and the petroleum ether layer the mobile phase.

490. Sokliar, N. M.
Rapid method of determining bile pigments in urine. VOEN.-MED. ZH. 4:70-71 (1957). (In Russian)

Two ml. of Erhlich's diazo reagent is added to 8 ml. of urine. The color developed after 30 seconds is compared with that of a standard $Fe(CNS)_3$ solution. The determination takes 1-1-1/2 min. The reaction has a specific sensitivity of 1 in 250,000.

491. Short, E. I.
The estimation of isonicotinyl acid hydrazide and some of its metabolites in urine. TUBERCLO. 42:218-226, Jun 1961.

492. Silverman, F. G., Ebaugh, F. G., Jr. and Gardener, R. C.
Nature of labile citrovorum factor in human urine. J. BIOL. CHEM. 223:259-270 (1956).

The bulk of the growth-supporting activity for Leuconostoc citrovorum which occurs in human urine after a test dose of folic acid is due to anhydrocitrovorum factor (N-5 to N-10 bridge compound) and N-10-formyltetrahydrofolic acid.

493. Silverman, M., Gardiner, R. C. and Condit, P. T.
Method for detection of N-formiminoglutamic acid in urine. J. NAT. CANCER INST. 20:71-77 (1958).

494. Simon, E. J., et al.
Metabolism of vitamin E. I. Absorption and excretion of D-α-tocopheryl-5-methyl [^{14}C] succinate [TMS]. II. Purification and characterisation of urinary metabolies of α-tocopherol. J. BIOL. CHEM. 221:797–805, 807–817 (1956).

I. Absorption of TMS from the gastrointestinal tract and from subcut. tissues was low when an oily vehicle was used. Complete excretion of ^{14}C after i.v. injection required 15–20 days; urine contained 20–30 percent and feces 70–80 percent of the excreted ^{14}C. After parenteral administration of a tracer dose of TMS, free α-tocopherol comprised 40–50 percent of the ethanol-extractable fecal ^{14}C. The bulk of the urinary ^{14}C was present in a metabolie of α-tocopherol, possibly the glucuronide.

II. The urine of humans ingesting large quantities of vitamin E contained 2 metabolites of α-tocopherol, largely in conjugated form. After hydrolytic removal of the conjugating groups, the metabolites were identified as 2-(3-hydroxy-3-methyl-5-carboxy-pentyl)-3 : 5 : 6-trimethylbenzoquinone and its γ-lactone.

495. Sjoerdsma, A., et al.
Identification and assay of urinary tryptamine; application as an index of monamine oxidase inhibition in man. J. PHARMACOL. EXP. THERM. 126:217–222 (1959).

Tryptamine was identified in human urine by its activation and fluorescence spectra, its distribution between various solvent systems, and its Rf value. The daily output varies between 40–70 μg./day. When humans are fed with 20 mg./kg. of tryptophan, there is a 4-fold rise in tryptamine output, but this does not occur if tryptamine itself is given orally (up to 40 mg./kg.). Presumably the amine does not come from the intestine. When monamine oxidase inhibitors are given to humans (1-phenyl-2-hydrazinopropane, iproniazid), the output of tryptamine rises 6 times within 2 days with a dose of 25 mg. of inhibitor per day; after the drug is withdrawn, tryptamine excretion gradually falls to pre-treatment levels over 6 days.

496. Slaunwhite, W. R., Jr. and Sandberg, A. A.
Binding of urinary conjugated steroids to serum albumin: new method of extraction.
ENDOCRINOLOGY 62:283–286 (1958).

Urinary steroid conjugates bind readily to human or bovine serum albumin, especially the conjugated metabolites of eostradiol, oestrone, progesterone and testosterone. A new method of extraction which utilizes this fact is described.

497. Smith, P.
STUDIES IN THE CHEMISTRY OF STRESS. I. THE EXCRETION OF ETHER SOLUBLE METABOLITES IN ANOXIA. RAF Inst. of Aviation Medicine (Gt. Brit.), Farnborough; issued by Flying Personnel Research Committee (Gt. Brit.). Rept. no. FPRC 931(a), Nov 1955, 5p. ASTIA AD-81 809.

Two series of chromatograms of extracts from acid-hydrolyzed urine samples of subjects exposed to normal working-day and mild anoxia conditions were compared to determine whether anoxia caused the appearance in urine of any abnormal metabolites. The samples were obtained from 5 apparently healthy young male subjects who were placed in a decompression chamber at an altitude equivalent to 14,000 feet without oxygen for 2-hour periods. Urine was collected just before descent; urine from the control subjects was collected at about the same time during similar periods of normal activity. Chromatograms of not more than 2 of the 5 subjects' samples showed occasional abnormal spots. No over-all increase or decrease in anoxia was noted in the numbers and intensities of the total spots which were detected.

498. Smith, P.
STUDIES IN THE CHEMISTRY OF STRESS.
II. A NEW METHOD OF URINE ANALYSIS:
ITS APPLICATION TO THE STUDY OF ANOXIA.
RAF Institute of Aviation Medicine, Farnborough;
issued by Flying Personnel Research Committee
(Gt. Brit.). Rept. no. FPRC 931(b), Dec 1955,
4p. ASTIA AD-84 373.

Material obtained by precipitation with ferric chloride from the urine of normal and anoxic subjects was chromatographed in ethanol-water-concentrated ammonia and butanol-acetic-acid water. An increase in number of spots was observed in chromatograms from anoxic subjects. The uncertainty of chemical transfer mechanisms in the preparation of the chromatographed material makes the method unsatisfactory for the quantitative analysis of urine.

499. Smith, P.
STUDIES IN THE CHEMISTRY OF STRESS.
III. EXCRETION IN NORMAL AND ANOXIC
SUBJECTS OF SUBSTANCES ABSORBED BY
CHARCOAL. RAF Institute of Aviation Medicine,
Farnborough; issued by Flying Personnel Research
Committee (Gt. Brit.). Rept. no. FPRC 931(c),
Dec 1955, 3p. ASTIA AD-84 372.

Charcoal-adsorbed material from the urine of normal and anoxic subjects was chromatographed in ethanol-ammonia and butanol-acetic acid. An increase in the number of spots and a distribution shift from weak to stronger spots were observed in chromatograms from anoxic subjects. It is concluded that anoxia causes a general increase in the excretion of substances which can be detected by the charcoal adsorption method.

500. Smith, P. and Bennett, A. M. H.
Vallinic acid excretion during stress.
NATURE 181:709 (1958).

Increased amounts of 4-hydroxy-3-methoxybenzoic (vanillic) acid were detected chromatographically in the urines of some of the subjects undergoing periods of prolonged stress (motor car rally). This increased excretion of vanillic acid may reflect the secretion of adrenaline and noradrenaline in stress situations.

501. Smith, P.
Significance of urinary vanillic acid. NATURE
182:1741–1742 (1958).

Although some urinary vanillic acid is of dietary origin, there is evidence that vanillic acid has an endogenous origin, arising from the metabolism of adrenaline or noradrenaline. In the urine of 2 subjects the increase in urinary 4-hydroxy-3-methoxymandelic acid, a known metabolite of noradrenaline was paralleled by an increase in urinary vanillic acid. Further evidence is found in the changes in the excretion of 3-ethoxy-4-hydroxybenzoic acid, closely related chemically to vanillic acid, which occurs during stress.

502. Smith, P.
STUDIES IN THE CHEMISTRY OF STRESS.
IV. FURTHER CHROMATOGRAPHIC STUDIES
OF THE EXCRETION OF AROMATIC COMPOUNDS IN STRESS. Flying Personnel Committee
(Gt. Brit.). Rept. no. FPRC-1050, Jun 1958,
6p. ASTIA AD-203 213.

A convenient method of separating strong (carboxylic) acids from neutral or weakly acidic (phenolic) compounds such as occur in ether extracts of acid-hydrolysed urine is described. Methods of chromatographing separately on paper the resulting acidic and non-acidic fractions and of detecting the individual compounds are also described and applications to the study of human excretion in stress, particularly mild anoxia, are reviewed. Brief mention is made of the chromatography of extracts of unhydrolysed urine.

503. Sobel, C. and Henry, R. J.
Determination of catecholamines (adrenaline and noradrenaline) in urine and tissue. AMER. J. CLIN. PATH. 27:240–245 (1957).

A method of preserving the catecholamines in urine for 7 days at room temperature and fluorimetric methods for the determination of adrenaline and noradrenaline, independently or their sum, in urine, or adrenal tissue, have been used for 66 patients with hypertension. There were six proven cases of phaeochromocytoma, all excreting increased amounts of catecholamines, 1 false positive and no known false negatives. 24 normal urines were also assayed.

504. Sobel, C., et al.
Determination of α-amino acid nitrogen in urine. PROC. SOC. EXP. BIOL., N. Y. 95:808–813 (1957).

The specificity of the $Cu_3(PO_4)_2$ and napthoquinone methods is materially improved by preliminary isolation of the amino acids on an ion exchange column.

505. Sobel, C., Golub, O. J. and Basu, G. K.
Norymberski methods for determination of 17-ketogenic steroids (17-hydroxycorticosteroids) in urine. J. CLIN. ENDOCR. 18:208–221 (1958).

Several factors in the Zimmermann reaction were studied: time and temperature of color development, composition of reagents, specificity and method for correcting for background absorbance. The stoicheiometry of the bismuthate oxidation reaction was studied and shown to effect satisfactory recoveries. Conditions for quantitative reduction of 17-KS and the 17-ketogenic steroids appear to be relatively stable at room temperature without added preservative.

506. Sorensen, L. B.
Degradation of uric acid in man. METABOLISM 8:687–803, Sep 1959.

507. Soupart, P.
Determination of histidine in urine by a specific enzymic method and its application to a study of histidine excretion in normal and pregnant women.
CLIN. CHIM. ACTA 3:349–356 (1958).
(In French)

A gasometric method of determining histidine based on enzymic decarboxylation and manometric measurement of the CO_2 evolved has been developed. It is quick, easy to perform, and can be applied directly to urine. Compared with ion exchange chromatography the method is more accurate when the urinary output of histidine is low, as in non-pregnant women. In non-pregnant women the daily urinary excretion of histidine is less than 210 mg./24 hr. under controlled diet conditions. It rises above this level as early as two weeks after a missed period.

508. Soupart, P.
Urinary excretion of free amino acids in normal adult men and women. CLIN. CHIM. ACTA 4:265–271 (1959).

When amino-acid excretion is calculated in terms of α-amino N, average figures are 87 mg./24 hr. for females, and 91 mg./24 hr. for males.

509. Sperber, I.
Secretion of organic anions in the formation of urine and bile. PHARM. REV. 11:109–134 (1959).

510. Spioch, F. M.
On thermal loss of iron with the sweat in man.
POL. TYG. LEK. 16:701–703, 8 May 1961.
(In Polish)

511. Stalder, K.
Paper chromatographic determination of urinary short-chain dicarboxylic acids. HOPPE-SEYLERS Z. PHYSIOL. CHEM. 311:221-226 (1958). (In German)

512. King, J. S., Jr. and Warnock, N. H.
Some clinical conditions affecting urinary excretion of non-dialysable hexosamine. PROC. SOC. EXP. BIOL., N. Y. 92:369-371 (1956).

Non-dialysable hexosamine in human urine increases isgnificantly and consistently during the last half of pregnance, and in patients with renal calculi or atherosclerosis. Two days on a high (800 mg./day) Ca diet did not raise the bound hexosamine level in a normal male.

513. Starka, L.
Paper chromatographic separation of 17-ketosteroids in urine. NATURWISSENSCHAFTEN 45:240-241 (1958). (In German)

514. Starlinger, H.
Daily fluctuation in urinary electrolyte and ketosteroid output and changes with different work and climatic conditions. INT. Z. ANGEW. PHYSIOL. 17:341-370 (1958). (In German)

The effect was found of work of different kinds, at a rate of 5 kcal./min., and of hot conditions on the 24 hour rhythms of excretion of electrolytes and of 17, 20-dihydroxy-21-ketosteroid in 2 heat acclimatized men. For one the heat chamber was set at 39°, relative humidity of 60-65 percent, wind velocity 0.5 m./sec; for the other the setting was 45°, relative humidity of 20 percent, wind velocity 1 m./sec. In 2 series of experiments the food intake was controlled but generally only the breakfast taken before the 3 hour experimental period was controlled. The most striking change from the well known pattern of electrolyte excretion was in the K:Na ratio; this was greatly increased. The steroid excretion followed no simple rule but increased in the subject working at the higher temperature to equal his morning value.

515. Steigleder, G. K.
Behavior of ground substance, basal membrane and sweat glands in human skin together with an observation on the phenomenon of loss of glycogen. KLIN. WSCHR. 36:389–390 (1958). (In German)

516. Stern, M. I.
Determination of 5β-pregnane-3α : 17α : 20α-triol in urine. J. ENDOCR. 16:180–188 (1957).

5β-Pregnane-3α:17α:29α-triol is found in unusually large quantities in the urine of many paiteints with adrenal hyperplasia. A method for its determination is described, which enables this and urinary pregnanediol to be measured concomitantly. The sensitivity, precision and specificity of the method are discussed.

517. Stern, M., et al.
Potentiometric measurement of pCl. Application to determination of chloride in sweat, urine and miscellaneous solutions. ANALYT. CHEM. 30:1506–1510 (1958).

Measurement is made with pH meter, Ag/AgCl and reference calomel electrodes after standardisation with 0.1 N KCl. In pure solutions the accuracy is 0.02–0.03 pCl units in the concentration range 1.0 to 10–4 M. The principal use is the analysis of Cl in sweat collected as a diagnostic test for cystic fibrosis of the pancreas.

518. Strickler, H. S., Grauer, R. C. and Caughey, M. R.
Determination of urinary oestrogens: elimination of impurities by physico-chemical means. ARCH. BIOCHEM. BIOPHYS. 64:88–98 (1956).

519. Stuettgen, G. and Lewald, L.
On the distribution of depot sulfonamides in the liver and skin of the mouse and in the skin and sweat of man. ARCH. KLIN. EXP. DERM. 214:123–130 (1961). (In German)

520. Sullivan, M. X. and Irreverre, F.
Highly specific test for creatinine. J. BIOL. CHEM. 233:530–534 (1958).

The colorimetric test depends on the reaction of creatinine with K 1:4-naphthaquinone-2-sulphonate to give a carmine color. This very specific method is used for determination of creatinine in urine and in blood. Blood contains very small amounts of creatinine – approximately 1 mg./100 ml. of blood. The estimation of creatinine from total creatinine values in urine is unsatisfactory.

521. Svatos, A.
Pancreozymin activity of urine. NATURWISSENSCHAFTEN 45:523–524 (1958). (In English)

522. Svatos, A.
Cholecystokinin activity of urine. SCIENCE 129:567–568 (1959).

A factor in urine of men and animals evokes the contraction of the gall bladder without increasing blood pressure. It increases in urine after application of a secretogenous stimulus to the duodenum but decreases after resection of the duodenum. A concentrate of urine had an effect similar to that of cholecystokinin, and was therefore called urocholecystokinin.

523. Tabor, H. and Wyngarden, L.
Method for determination of formiminoglutamic acid in urine. J. CLIN. INVEST. 37:824–828 (1958).

Formimino-L-glutamic acid, an intermediate in the metabolism of histidine, accumulates in the urine in folic acid defiency. A spectrophotometric method based on enzymic reactions is described.

524. Taussky, H. H.
Procedure for increasing the specificity of the Jaffe reaction for determination of creatinine and creatine in urine and plasma. CLIN. CHIM. ACTA 1:210–224 (1956). (In English)

525. Tcherkes, I. A. and Filchagin, N. M.
Role of S-containing amino acids in changes of amount of N-methylnicotinamide in urine caused by protein content of diet. BIOKHIMIIA 21:64–70 (1956). (In Russian)

Low protein content in rat diet causes an increase in the elimination of N-methylnicotinamide, but if cystine or methionine are included in the diet the rate of elimination is greatly reduced. Other essential amino acids (lysine, valine) have no such effect. If the diet contains sufficient tryptophan, S amino acids do not reduce the amount of N-methylnicotinamide in the urine. It is suggested that nicotinic acid participates in the metabolism of S amino acids, their increased amount in the diet increasing the niacin requirement and reducing the excretion of niacin metabolites.

526. Teller, W. and Staib, W.
Determination of reducing corticosteroids in urine. ACTA ENDOCR. (Copenhagen) 28:447–458 (1958). (In English)

The contents of reducing corticosteroids by the Tetrazolium Blue and the phosphomolybdic acid reactions. A simplified procedure is given in addition to the detailed methods.

527. Tertitsa, E. E.
Quantitative determination of sugar in urine by drop method. VOEN. -MED. ZH. 1:77-78 (1953). (In Russian)

The determination of sugar in urine is carried out by the titration of 2 ml. reagent (a mixture of 20 ml. glycerine with 80 ml. of 20 percent NaOH is boiled, then successively treated with 80 ml. 10 percent K ferrocyanide and 40 ml. 10 percent $CuSO_4$) with urine, using a dropping pipette. The pipette is previously calibrated by titrating 2 ml. of the reagent with a 1 percent glucose solution. Conversion tables are given.

528. Thomas, K., et al.
Methylmalonic acid in urine. HOPPE-SEYLERS Z. PHYSIOL. CHEM. 308:213-219 (1957). (In German)

Methylmalonic acid is present in human, dog, and rat urine and in small amount in rabbit urine. Rats fed large amounts of anthracene excrete increased amounts of methylmalonic and succinic acids.

529. Thomas, K. and Stalder, K.
C_5-Dicarboxylic acids in urine. HOPPE SEYLERS Z. PHYSIOL. CHEM. 317:269-275 (1959). (In German)

The isolation of glutaric and methylsuccinic acids from normal urine using methods previously described by Stalder (1958) is reported. In human urine each of the acids was present, up to 2.5 mg./day; in rats the amount was about 20-25 μg./day. Methylfumaric and dimethylmalonic acid were not found in normal urine but the latter was found in trace amounts after feeding α, γ-dihydroxy-β, β-dimethylbutyric acid. Feeding experiments in rats showed that urinary glutaric acid was derived from glycine and methylsuccinic acid was derived from leucine.

530. Thomas, S.
Change of posture on water and electrolyte excretion by the human kidney. J. PHYSIOL. (London) 139:337–352 (1957).

Alterations in urinary pH flow and electrolyte excretion were determined for some hours after standing up and after lying down and compared with controls in which the initial posture was maintained. Standing up was followed by: (i) prolonged reductions in urine flow and the outputs of Na and Cl, (ii) increased hydrion excretion as manifested by decreases in urine pH and HCO_3 output, and increases in NH_4 and titratable acid outputs, (iii) decreases in the percent of urinary anion [A] covered by sodium ($Na/_A$) and in the percent of cation [B] covered by bicarbonate ($HCO_3/_B$), and increases in $K/_A$ and $NH_4/_A$. The opposite changes occurred after lying down. The progressive changes in urine acid-base balance indicate an altered tubular Na $\rightleftharpoons$ H exchange and it is suggested that this is mediated by a hormonal mechanism, possible aldosterone, in response to stimulation of some extracellular fluid 'volume receptor'.

531. Thomas, S.
Effects of change of posture on diurnal renal excretory rhythm. J. PHYSIOL. (London) 148:489–506 (1959).

Urinary electrolyte outputs were determined for several hours before and after change of posture during the day and at night and compared with experiments in which the initial posture was maintained. In addition to any acute change in Ha output attributable to an alteration of GFR, standing up was always followed by a specific retention of Na – largely associated with an increased tubular ion-exchange for H and K – and a relative decrease in Na/K excretory ratio; recumbency was associated with opposite changes. These responses, which profoundly modified the diurnal rhythm in Na and H outputs and Na/K ratio, are considered to be due to the stimulation of a homeostatic 'volume receptor' mechanism, involving variations in aldosterone secretion.

532. Thorn, W. and Nelson, D. H.
QUANTITATION OF ADRENAL CORTICAL RESPONSE IN MAN. Peter Bent Brigham Hospital, Boston, Mass. Rept. for 1 Jan 1958–1 Jan 1959, 8p. ASTIA AD-211 179.

Effort was directed toward improving methods for measuring adrenal function in man. A new method was developed for the determination of ACTH in blood which appeared to be much more sensitive than previous methods. Methods for measuring aldosterone were investigated, and a routine reproducible procedure was set up. Investigations were carried out on specific keto fractions which are excreted in the urine under normal and pathological conditions. Effort was directed toward the development of better quantitative and qualitative methods for measuring corticosteroids in blood and urine.

533. Tiller, R.
CATECHOL AMINE EXCRETION IN URINE DURING SIMULATED FLIGHT. Air Crew Equipment Lab., Naval Air Material Center, Philadelphia, Pa. Rept. no. NAMC ACEL 456, 19 Apr 1961, 10p. ASTIA AD-255 215.

Seven subjects flew a prescribed pattern in an F9F simulator under three suit conditions for six hour periods. The three suit conditions were (1) summer flight suit, (2) the Navy's full pressure suit, pressuirized to 0.5 psi, and (3) the full pressure suit, pressurized to 2.0 psi. Urines were collected prior to and after each experimental trial for epinephrine and norepinephrine determinations. Results show that there is a marked increase in epinephrine and norepinephrine excretion in the pressure suit conditions over the summer flight suit condition.

534. Tomaszewski, L. and Czartoryska, B.
New method for determining specific gravity of very small quantities of urine. CLIN. CHIM. ACTA 4:297–301 (1959). (In French)

This new method is based on the movement of drops of stained standard solution of known specific gravity in the urine. 0.5 ml. can be estimated, so the method is specially suitable for pediatric work.

535. Tompsett, S. L.
Identification and determination of phenols and phenolic acids in urine. CLIN. CHIM. ACTA 3:149–159 (1958). (In English)

The following reactions for determining phenols and phenolic acids in urine were investigated:- Folin-Ciocalteau reagent, indophenol pigment formation, reaction with 1-nitroso-2-napthol, and Erhlich's reaction, p-dimethylaminobenzaldehyde. Some degree of specificity was achieved by preliminary treatment of the urines, and paper chromatography. Higher values for phenolic substances in normal urine were obtained by these methods than by ion exchange or microbiological methods.

536. Tompsett, S. L.
Determination and excretion of polyhydroxy (catecholic) phenolic acids in urine. J. PHARM. (London) 10:157–161 (1958).

537. Tompsett, S. L.
Determination in urine of some metabolies of tryptophan-kynurenine, anthranilic acid and 3-hydroxyanthranilic acid and presence of o-aminophenol in urine. CLIN. CHIM. ACTA 4:411–419 (1959). (In English)

Methods are described for the determination of these substances. Their urinary excretion has been studied in normal subjects, one case of hypoplastic anaemia, and a few cases of malignant disease of the bladder. In normals the oral ingestion of 5 g. of L-tryptophan caused a significant increase in the excretion of 3-hydroxy-anthranilic acid, kynurenine and o-aminobenzoic acid, but a large amount of tryptophan was unaccounted for. There was no apparent effect on the excretion of o-aminophenol. Acetanilide (200 mg.) given orally to normal humans increased the excretion of p-amino-phenol but not the o-compound.

538. Torban, M. A.
Importance of control assays in the study of urinary diastase. LABOR. DELO 1:22–24 (1956). (In Russian)

539. Touchstone, J. E., et al.
Excretion of pregnane-3α:17α:21-triol-20-one (tetrahydro S) in normal and pathological urine. J. CLIN. ENDOCR. 17:250–255 (1957).

The identification of tetrahydro-S is discussed. The urinary excretion of this substance has been studied by paper chromatographic methods. Urine was obtained from normal and pregnant subjects, from patients with hyperfunction or hypofunction of the adrenal cortex, and from patients with miscellaneous conditions. Excretion of tetrahydro S varied from zero (undetectable) to 15 mg. per 24 hours. The highest values were found in patients with adrenocortical tumors.

540. Touchstone, J. C.
Isolation of corticosterone metabolites from urine or normal men. ARCH. BIOCHEM. 81:5–14 (1959).

The separation of urinary steroids by paper chromatography is described. From the mobility in different solvents and in some cases from i.r. spectra, pregnane-3α, 11β, 21-triol-20-one, allopregnane-3α, 11β, 21-triol-20-one, Δ^4-pregnene-21-ol-3, 11, 20-trione and allopregnane-3α, 21-diol-11,-20-dione were identified.

541. Tsao, M. U. and Pfeiffer, E. L.
Isolation and identification of a new ketone body in normal human urine. PROC. SOC. EXP. BIOL., N. Y. 94:628–629 (1957).

Methylethylketone was isolated from normal human urine and identified. The most likely precursor is α-methylacetoacetic acid, which has been suggested as an intermediate of isolcucine catabolism. Methylethylketone may have a dietary origin.

542. Ullrich, K. J. and Jarausch, K. H.
I. Concentration and dilution of urine.
Distribution of electrolytes (sodium,
potassium, calcium, magnesium, chloride,
inorganic phosphate), urea, amino acids and
exogenous creatinine in the cortex and medulla
of the dog kidney in the course of diuresis.
PFLUGERS ARCH. GES. PHYSIOL.
262:537–550 (1956). (In German)

The Na, K, Ca, Mg, Cl, inorganic PO_4, creatinine, urea, and amino acid content of portions of tissue from the cortex, inner and outer medulla and tips of the papillae of the dog kidney were determined. The animals were killed and the kidneys examined immediately after a period of water-deprivation or water diuresis. Following water deprivation there was an increased concentration of Na, Cl, urea, exogenous creatinine and amino acids from the outer medulla towards the papillae, and this increased with increasing urine concentrations. These substances in these regions showed no change in the animals subjected to water diuresis, and the process depends on the hypertonicity of the urine. The total osmotic pressure of the substances present in the papillae was less than that of the urine produced. The urea concentration in the tissues of the papillae was similar to that in the urine indicating a full equalization of the urea concentration between the collecting tubules, loop of Henle, interstitium and cells. The concentrations of K, Mg, Ca, and inorganic PO_4 showed no variation which could be related to the state of diuresis. The concentration of Ca and inorganic PO_4 were particularly high in the inner medulla in old animals, possibly indicating a storage or deposition of a $Ca - PO_4$ compound.

543. Ullrich, K. J. and Dehling, G.
Occurrence of phosphorus compounds in various
slices of kidney and changes of their concentration
in relationship to the course of diuresis. PFLUGERS
ARCH. GES. PHYSIOL. 262:551–561 (1956).
(In German)

In a similar study the inorganic + labile, acid-soluble, lipoid-nucleic acid- and residual-P were determined, the AMP, ADP, and ATP fractions also being estimated. No significant change of concentrations of these substances was detected in relation to the course of diuresis. There was a decrease in concentrations of lipid-P, AMP, and ADP from the cortex to the tips of the papillae; the concentration of acid-soluable

organic-P increased from cortex to papillae and was related to the concentration of the urine formed. No relation between this and the organic-P concentration of the urine was detected. The increase in acid - soluble organic-P is brought about the occurrence of a P-compound which is not absorbed on Dowex 1, 2 or 50 and does not form sparingly-soluble Ba, Pb, or uranyl salts. A similar substance is found in the outer medullary zone. Observations on the nature of this compound are reported, including measurement of the rate of incorporation of ^{32}P.

544. Use of Sternheimer-Malbin staining technique in examination of urinary sediments. WHAT'S NEW 218:16–20, Summer 1960.

545. Vivian, V. M., Chaloupka, M. M. and Reynolds, M. S.
Tryptophan metabolism in human subjects. I. Nitrogen balances, blood pyridine nucleotides and urinary excretion of N^1-methylnicotinamide and N^1-methyl-2-pyridone-5-carboxamide on low-niacin diet. J. NUTR. 66:587–598 (1958).

I. Young women on a low-niacin, low-tryptophan intake utilized gradually increasing tryptophan supplements in the following sequence: to establish N equilibrium, for blood pyridine nucleotides synthesis and finally there was an increase in the urinary excretion of the two niacin metabolites.

546. Van Caneghem, P. and Schirren, C. G.
On electrometric determination of the oxidation-reduction potential (O.R.P.) on the skin surface.
II. The oxidation-reduction potential of sweat.
ARCH. KLIN. EXP. DERM. 212:153–157 (1960).
(In German)

547. Van Gilse, H. A., Nass, C. A. G. and Kassenaar, A. A. H. Assay of urinary gonadotrophins by ultrafiltration and mouse uterine weight assay. II. Ultrafiltration technique. ACTA ENDOCR. (Copenhagen) 24:91–105 (1957).

Results with ultrafiltration and ethanol precipitation are comparable. Control studies indicate that 50–100 percent of the gonadotrophic activity in the urine is measured by the procedure. Illustrative assays on urine from normal men and normal pre- and post-menopausal women are given.

548. Van Pilsum, J. F. and Seljeskog, E. L. Long term endogenous creatinine clearance in man. PROC. SOC. EXP. BIOL., N. Y. 97:270–272 (1958).

Effects of urinary volume, diet, and exercise, on long term endogenous creatinine clearance were studied in normal subjects. Variations in urinary volume did not affect the clearance values, but protein ingestion and exercise seemed to increase it slightly. One hour clearances were similar to 24 hour clearances. Long term creatinine clearances of 39 normals of various age groups were determined and found to be similar to reported inulin clearance values for these age groups.

549. Van Sumere, C. F., Teuchy, H. and Massart, L. Coumarins in normal and pathological human urines. CLIN. CHIM. ACTA 4:590–593 (1959).

Normal and pathological human urine were analysed for coumarins. A circular paper chromatographic method for identification of small quantities of coumarins and phenolic acids was used. Umbelliferone, (7-hydroxy-coumarin) and aesculetin (6, 7-dihydroxy-coumarin) were found in trace amounts in normal human urine. Patients under treatment with prednisone showed a surprisingly higher urine content of umbelliferone and/or aesculetin. It is suggested that the production of these coumarin derivatives is related to the level of corticosteroid hormones in the body.

550. Van Thoai, N., et al.
Carbamyl and guanidine derivatives in urine and their biological significance. C. R. SOC. BIOL. (Paris) 150:2160-2164 (1956). (In French)

Humans and rats are treated orally or by i.p. injection with seven amino acids; glycine, sarcosine, alanine, lysine, phenylalanine, tyrosine, and taurine, at concentrations of 200-300 mg./kg. body weight. The metabolites appearing in the urine are chromatographed for analysis. Carbamyl derivatives are found for glycine, sarcosine, tyrosine, and taurine. Seven derivatives of guanidine corresponding to arginine, glycocyamine, guanidobutyric acid, and taurocyamine are found. The results indicate that carbamyl and guanidine derivatives are concerned in the detoxication of ammonia.

551. Van Thoai, N. and Lacombe, G.
δ-Guanido-n-valeric acid in human urine. BIOCHIM. BIOPHYS. ACTA 29:437-438 (1958). (In French)

After extraction procedures involving a solvent extraction and ion-exchange chromatography, a substance is detected in human urine that behaves on paper chromatograms in exactly the same way as δ-guanido-n-valeric acid. It is present in very small concentrations only.

552. Vartio, T. and Vuopio, P.
Uropepsin and urocathepsin in normal and certain pathological conditions. A comparative study. ANN. MED. EXP. FENN. 36:278-284 (1958).

Uropepsin and urocathepsin were determined on 24-hour urine samples from 50 normal subjects and 37 patients with various diseases. Normal uropepsin values ranged from 3.9-201.4 (mean = 53.7) units/hr., and urocathepsin values from 0-66 (mean = 21.0) mg. edestin/hr. Threr was no dependence of the 2 values on each other either in normals or in disease; in 7 cases of total or subtotal gastrectomy where uropepsin was zero, 6 patients had normal urocathepsin values, possible due to extraventricular sources of urocathepsin. Urocathepsin determinations in disease have no diagnostic value.

553. Vassileff, G.
Quantitative determination of hippuric acid in urine. C.R. ACAD. BULG. SCI. 13:685-688 (1960).

Hippuric acid was extracted with ether from an acidified saturated water-solution, and extimated by titration.

554. Veksler, R. I.
Assay of the nitrogen content of urine by the titration method. VOP. MED. KHIM. 1:450-452 (1955). (In Russian)

A method is suggested based on the oxidation of urinary N-compounds with NaBrO in a weak alkaline medium. To 4 ml. of 0.5 percent solution of $CdSO_4$ (for fixing possible sulphides) 0.1 ml. of urine diluted in water (1 : 10), 5 ml. of freshly prepared NaBrO solution and 10 drops of 35 percent KI acidified with HCl and titrated with 0.005 N-$Na_2S_2O_4$. The method is quick and accurate, and the presence of protein up to 16 mg. percent does not interfere with the assay.

555. Verboom, E.
Quantitative determination of pregnane-3 (α); 20(α) diol in urine. ACTA ENDOCR. (Copenhagen) 24:1-50 (1957). (In English)

556. Verghese, N.
Paper electrophoresis of urinary porphyrins. J. CLIN. PATH. 11:191-192 (1958).

557. Verneulen, A.
Urinary corticoids; paper chromatographic evaluation of colorimetric method. ACTA ENDOCR. (Copenhagen) 26:399–405 (1957). (In English)

Although important differences exist between the results obtained by paper chromatography and by the chemical method, statistical analysis shows a significant correlation between the results obtained by the two methods. This indicates that the routine reaction using phenylhydrazine, although of low specificity, is nevertheless a useful index of corticoid excretion. Thus, a relatively simple but reliable method is available for the routine determination of corticoids for clinical purposes.

558. Verney, E. G.
Renal excretion of water and salt. LANCET ii:1237–1242 and 1295–1298 (1957).

559. Vestergaard, P. and Leverett, R.
Excretion of combined neutral urinary 17-ketosteroids in short term collection periods; spontaneous variability. ACTA ENDOCR. (Copenhagen) 25:45–53 (1957). (In English)

Great individual differences were found in the excretion. In subjects with the most stable excretion patterns a number of factors claimed to influence 17-ketosteroid excretion had no verifiable influence: these include nutritional, emotional and climatic factors and also exercise. In subjects with labile excretion patterns, one of the factors most often correlated with increased excretion was emotional tension. A double wave rhythm in excretion with a morning maximum and a later secondary maximum was found on 179 of the 200 collection days. A variability difference between the sexes was found.

560. Vestergaard, P. and Leverett, R.
Constancy of urinary creatinine excretion. J. LAB. CLIN. MED. 51:211–218 (1958).

Considerable individual variation was found in urinary creatinine excretion. The estimation of urinary creatinine excretion in short collection periods varies considerable more than 24-hour estimations. Creatinine should not be used to check the completeness of urine collection in short experimental periods, nor should it be used for establishing excretion ratios, unless a preliminary investigation of variability is undertaken.

561. Visco, G.
The bacteriological examination of urine.
POLICLINICO (Prat) 68:523-530,
3 Apr 1961. (In Italian)

562. Voigt, K.
Chemical determination of histidine in protein hydrolysates and in urine. BIOCHEM. Z.
331:127-132 (1959). (In German)

A micro-determination (0.2-0.7 mg.) of histidine by colorimetry is described. It is a modification of Kepeller-adler's method. In this modification the excess bromine, cyclic amino acids and heavy metals are removed, partly by absorption and partly by coupling reactions. A table summarizes the results of measurements on human serum, rat globin, Jensen's sarcoma, Walker's carcinoma of the rat and ascites tumor of the mouse.

563. Von Euler, U. S. and Lishajko, F.
Estimation of catechol amines in urine.
ACTA PHYSIOL. SCAND. 45:122-132 (1959).
(In English)

Certain modifications in the fluoremetric method of Euler and Floding are described.

564. Von Euler, U. S. and Lishajko, F.
Excretion of catechole in human urine. NATURE
183:1123 (1959).

565. Von Kaulla, K. N.
Extraction and concentration of thromboplastic material from human urine. PROC. SOC. EXP.
BIOL. N. Y. 91:543-545 (1956).

The thromboplastic material is extracted from normal male human urine by absorption on BaSO and subsequent elution 2-3 mg./l. of comparatively heat resistance thromboplastic material are obtained. 6 μg. per ml. of hemophilic plasma will restore the clotting properties to normal. Neither physiological significance nor source of this urinary thromboplastic material is known as yet.

566. Von Metzsch, F. A.
Examples of multiple distributions. ANGEW. CHEM. 68:323–334 (1956). (In German)

Includes tables giving details of separation of many biological compounds by Craig countercurrent method.

567. Walaszek, E. J.
Oxytocic polypeptides in human urine. BRIT. J. PHARMACOL. 12:223–227 (1957).

Bradykinin was shown to contain two substances when chromatographed on paper. Two active polypeptides found in urine corresponded to the two active substances found in bradykinin.

568. Walser, M. and Bodenlos, L. J.
Urea metabolism in man. J. CLIN. INVEST. 38:1617–1626 (1959).

From experiments using ^{15}N and ^{14}C labelled urea injected i.v. it was shown that urea production exceeded excretion by 20 percent and 1/4 of the labelled urea is not recovered in urine. Oral neomycin increased urine recovery of labelled area to 95 percent, suggesting that there is normally a loss of 1/4 of the urea produced due to hydrolysis by intestinal bacteria.

569. Walters, C. L.
Competitive alkaline phosphatase inhibitor from extracts of normal male urines. ENZYMOLOGIA 20:33–56 (1958).

The isolation of a pigment inhibitor (of mol. wt. 2100) of alkaline phosphatase in vitro from concentrated normal male urine is described. Kinetic experiments showed that the pigment is a competitive inhibitor, with reversible combination of one molecule of pigment with one molecule of the enzyme. Its inhibitory action depended on its acidic groups.

570. Watson, D. and Pratt, D. A. H.
Micro estimation of urea. NATURE
181:1475 (1958).

A method in which Feigl's reagent (Ag/Mn nitrate soln.) and a filter paper spot test are used to determine the concentration of urea in 5 to 20 μl. of biological fluid is described. A simple apparatus has been designed which deals with 24 analyses in less than 15 minutes.

571. Webb, T., Rose, B. and Schon, A. H.
Biocolloids in normal human urine. I. Amount and electrophoretic characteristics. CANAD. J. BIOCHEM. 36:1159–1166 (1958).

The biocolloids of normal urine have been isolated and characterized by free electrophoresis and electrophoresis on filter paper. An average of 133 mg. of material was recovered from 24-hour aliquots of normal urine. This material was composed of at least 7 components as revealed by free electrophoresis at pH 8.6. Five of these components were similar in electrophoretic mobility to the 5 serum components. A relatively large amount of material was present which behaved like the acid mucoproteins of normal serum. No lipoproteins were detected. Some of the components of the urinary biocolloids were shown to be derived from human serum γ-globulins by labelling the latter with I^{131}.

572. Webb, T., Rose, B. and Schon, A. H.
Biocolloids in normal human urine. II. Physicochemical and immunochemical characteristics.
CANAD. J. BIOCHEM. 36:1167–1175 (1958).

The biocolloids of normal urine were separated by electrophoresis on starch and compared with similarly prepared fractions of serum by ultracentrifugal, free diffusion, and immunochemical techniques. The albumin fraction of urine was indistinguishable from the serum component. The urinary γ2-globulins were shown to consist of low molecular weight (10,000) fragments of the normal antigenically related to some of the serum components but appeared to contain lower molecular weight materials. Some of the components of normal serum could not be detected in the urine and the urine contained at least 2 components which were not present in the serum.

573. Weil-Malherbe, H. and Bone, A. D.
Estimation of catecholamines in urine by a chemical method. J. CLIN. PATH. 10:138–147 (1957).

A method for the separate estimation of adrenaline, noradrenaline, and hydroxytyramine in urine. Values are given for normal urine and urine from patients with hypertension. The concentration of adrenaline and hydroxytyramine are definitely higher in hypertensives, and noradrenaline is probably also higher.

574. Weinmann, S. H. and Hayle, M. F.
Estimation of hydroxyl derivatives of steroids, and its application to the measurement of urinary hydroxysteroids. BULL. SOC. CHIM. BIOL. (Paris) 39:65–90 (1957). (In French)

A simple and sensitive method for the determination of alcoholic and phenolic hydroxyl derivative is described. Using this method, it has been possible to demonstrate substances hitherto undetectable by the usual methods of steroid determination. The chemistry and physiology of these compounds is ill defined.

575. Weinmann, S. H., et al.
Specificity of sulphoconjugation of two non-ketonic β-hydroxysteroids in urine of man. C.R. SOC. BIOL. (Paris) 151:518–520 (1957). (In French)

Urine is hydrolysed in acetic acid (0.1 M, pH 4.7) for 4 hours and then extracted in $CHCl_3$. This process releases SO_4 of Δ^5-3β-hydroxysteroids. It is shown that Δ^5-androstene-3β:17β-diol and Δ^5-androstene-3β:16α:17β-triol represent the metabolites of dehydroepiandrosterone.

576. Weinmann, S. H. and Jayle, M. F.
Comparative estimation of the hydroxyl group of lipids and that of various urinary steroids.
BULL. SOC. CHIM. BIOL. (Paris)
41:487–492 (1959). (In French)

The estimation of total lipid OH in urine is of very little value due to its low specificity. However, under certain physiological or pathological conditions it is sometimes useful to detect substances not determined by the usual techniques.

577. Weintrub, I. W. and Hollander, F.
Source and diagnostic significance of milk-clotting factor in human urine. GASTROENTEROLOGY.
36:823–829 (1959).

The method of determining uropepsinogen by measuring milk-clotting activity, using the urine of subjects with a wide variation in gastric secretory activity, is evaluated.

578. Weissman, B., Bromberg, P. A. and Gutman, A. B.
Purine bases of human urine. I. Separation and identification. J. BIOL. CHEM. 224:407–422 (1957).

The purine bases of human urine are absorbed from the acidified urine on Dowex 50, eluted with NH_3, precipitated with $AgNO_3$ and finally separated by 2-dimensional paper chromatography or ion-exchange chromatography. 1-Methylguanine, N^2-methylguanine, 1-methylhypoxanthine, 8-hydroxy-7-methylguanine, guanine, hypoxanthine, xanthine, adenine and 7-methylxanthine were deomonstrated in normal urine. 1-Methyl-7-methyl-, and 1 : 7-dimethylxanthine are present only after intake of coffee and similar substances.

579. Weissmann, B., Bromberg, P. A. and Gutman, A. B. Purine bases of human urine. II. Semiquantitative estimation and isotope incorporation. J. BIOL. CHEM. 224:423–434 (1957).

Purine bases were estimated semiquantitatively by u.v. measurements after their isolation by methods indicated in the previous abstract. The daily urinary excretion of 9 normal adult females were: hypoxanthine 9.7, xanthine 6.1, 7-methylguanine 6.5. 8-hydroxy-7-methylguanine 1.6, adenine 1.4, guanine 0.4, 1-methylguanine 0.6, N-methylguanine 0.5, 1-methylhypoxanthine 0.4. The absence of significant changes in excretion with diet indicates an endogenous source of these substances in man. The N from fed glycine was incorporated into all the urinary purines tested.

580. Weissmann, B. and Gutman, A. B. Identification of 6-succinoaminopurine and of 8-hydroxy-7-methylguanine as normal human urinary constituents. J. BIOL. CHEM. 229:239–250 (1957).

6-Succinoaminopurine and 8-hydroxy-7-methylguanine are normal urinary constituents. The amounts of each in urine, in normal and diseased states, may be related to the rate of synthesis of the precursors of nucleic acid adenine and guanine, respectively.

581. Williams, C. M. and Sweeley, C. C. A new method for the determination of urinary aromatic acids by gas chromatography. J. CLIN. ENDOCR. 21:1500–1504, Nov 1961.

582. Williams, G. and Pinkus, H. Sulphates in human sweat. J. INVEST. DERM. 28:271–272 (1957).

Healthy male volunteers were made to sweat profusely in a steam room at 40° and their sweat collected. This was tested quantitatively by a modified $BaCl_2$ method of Folin for inorganic and total sulfates. The results were not significantly increased after oral injestion of elemental S precipitation.

583. Wilson, H., Borris, J. and Garrison, M. CHROMATOGRAPHIC PROCEDURE FOR THE DETERMINATION OF URINARY CORTICOSTEROIDS AND C_{19} STEROIDS. Walter Reed Army Inst. of Research, Washington, D. C. Interim rept. on Psychological, Endocrinological and Metabolic Homeostatic Mechanisms in Health and Disease, Oct 1957, 27p. (Rept. no. WRAIR 146-57). ASTIA AD-152 743.

A comprehensive procedure for routine analysis of urinary steroids is described, consisting of a simple partition chromatographic column, operated to separate three fractions: $C_{19}O_2$ steroids or androgen metabolites, $C_{19}O_3$ steroids, and corticosteroids. The column consists of synthetic aluminum silicate as supporting phase, and 50 percent ethanol as stationary phase, developed by "stepwise" gradient employing hexane containing increasing proportions of chloroform. Eluates are sufficiently pure to give accurate titers in colorimetric assays. Steroid metabolites accurately determined without complete separation are: total 21-hydroxy corticosteroids, total 17-hydroxy steroids, polar 17-hydroxy-γ-glycols, Silber-Porter chromogens, $C_{19}O_2$ and $C_{19}O_3$ steroids both ketonic and non-ketonic.

584. Wilson, H., Lipsett, M. V. and Ryan, D. W. Urinary excretion of Δ^5-pregnenetriol and other 3β-hydroxy-Δ^5 steroids by subjects with and without endocrine disease. J. CLIN. ENDOCR. 21:1304–1320 (1961).

In all the urine samples analysed, Δ^5-pregnene-3β, 17α, 20α-triol [5-PT] was found, which indicated that its presumptive adrenal precursor 3β, 17α-dihydroxy-Δ^5-pregnen-20-one is regularly formed. Excretion of 5PT varied from 0.1 to 0.4 mg./day in 10 subjects without endocrine disorders and from 4 to 53 mg. in 5 patients with adrenal carcinoma; but raised levels were not found in 2 patients with Cushing's syndrome nor in 2 with Stein-Leventhal syndrome. Results obtained suggest that an inefficient conversion of 3β-17α-dihydroxy-Δ^5-pregnen-20-one to dehydroepiandrosterone [DHA] may result in increased formation of 5-PT. Δ^5-Pregnen-3β, 20α-diol was detected in the urine of all subjects without endocrine disorders and was found in increased amounts in the urine of 4 out of 5 adrenal cancer patients, in whom Δ^5-androstenediol excretion was about 1/10th that of the DHA.

585. Winkert, J., et al.
Partial purification of urinary erythropoietin.
PROC. SOC. EXP. BIOL. N. Y. 38:351-354
(1958).

Urinary erythropoietic factor was partially purified by adsorption on kaolin followed by serial elution with NH_4 acetate buffers of increasing pH and then with 1 M NH_4OH giving a 39 percent yield with a 230-fold purification of the active factor. The purified preparation produces metachromasia with Toluidine Blue, has an absorption peak at 280 mμ and migrates very slowly on paper electrophoresis. The similarity and differences between urinary and plasma erythropoietin are discussed.

586. Winkert, J., Gordon, A. S. and Winkert, E.
Purification and physiological effects of human urinary erythropoietin. TRANS. NY ACAD. SCI. 24:135-139, Dec 1961.

587. Winters, R. W. and Davies, R. E.
The role of countercurrent mechanisms in urine concentration: a review. ANN. INTERN. MED. 54:810-826, Apr 1961.

588. Wittenhagen, G.
Qualitative detection of protein in urine in presence of excretion product of N-4-methylbenzylsulphonyl-N-butyl urea (D860). DTSCH. MED. WSCHR. 82:254-255 (1957). (In German)

The urinary excretion product of D860 is precipitated at pH 5 and leads to errors in the quality detection of protein. This may be avoided if the urine (5 ml.) is heated for 30 seconds with an acetate buffer solution (0.5 ml.) when the protein is precipitated without the excretion product. The composition of the buffer is Na acetate 118 g.; 5 percent acetic acid 56 ml.; water to one liter. After filtration the excretion product may be precipitated with concentrated HCl.

589. Wohnlich, H.
Amylase, α-glucosidase and phosphorylases in human sweat. HOPPE-SEYLERS Z. PHYSIOL. CHEM. 308:197–203 (1957). (In German)

Glycogen was incubated with human perspiration and the cleavage products analysed. Results indicate that it contains amylase and α-glucosidase. Sweat also contained free phosphoric acid and P-esters of carbohydrates.

590. Woiwod, A. J. and Knight, R.
Determination of 3-methoxy-4-hydroxy-mandelic acid in urine. J. CLIN. PATH. 14:502–504 (1961).

The acid is extracted with ether, coupled with diazotised p-nitroaniline, and the dye extracted and used in colorimetry. Some normal values are given, and the method is compared with the Sandler-Ruthven method.

591. Wood, T.
Desalting of urine by electrodialysis. NATURE 186:634–635, 21 May 1960.

592. Wotiz, H. H., et al.
Conjugated 17-ketosteroids of human urine. J. CLIN. ENDOCR. 17:534–541 (1957).

Incubation with β-glucuronidase releases from urine only a fraction of the total amounts present of androsterone, 11-ketoandrosterone, 11 β-hydroxyandrosterone, aetiocholanolone, 11-ketoaetiocholanolone, and 11 β-hydroxyaetiocholanolone. A significantly greater proportion of the derivative of aetiocholanolone than of androsterone is released by the enzymic treatment.

593. Wright, J. T.
Rapid quantitative method for chemical estimation of urinary catechol-amines in diagnosis of phaeochromocytoma. LANCET ii:1155–1157 (1958).

Acidified urine is passed through an anion-exchange column in the acetate form, the effluent being free of strong organic and mineral acids. Boric acid is added to form strongly acidic complexes with the catechols present in solution. Passage of this solution through an anion-exchange resin in the borate form results in retention by the resin of its catechol complex. This is eluted by diluted acid and the catechols estimated fluorimetrically.

594. Wright, T.
Cell counts in urine. ARCH. INTERN. MED. 103:76–78 (1959).

595. Sendroy, W. J. and Bishop, C. W.
Interpretation of urinary ^{15}N excretion data following administration of ^{15}N labelled amino acids. J. APPL. PHYSIOL. 14:11–21 (1959).

Calculations of the size of pools is discussed and examples given of such calculations following administration of various amino acids. As labelled NH_2 is incorporated into more and more compounds and as each of these diffuses into an increasing number of body compartment the apparent size of the mixed amino-N pool, as reflected by urinary excretion, seems to expand with time until eventually it equals the total exchangeable NH_2 in the body.

596. Wu, H. and Elliott, H. C.
Urinary excretion of hippuric acid by man.
J. APPL. PHYSIOL. 16:553–556 (1961).

Under the experimental conditions endogenous hippuric, uric and glucuronic excretions were constant. The excretion constant K_E of exogenous hippuric acid was 2.7 $hr.^{-1}$ (Na hippurate doses of 1–4 mequiv.). The K_S for synthesis of hippurate from benzoate is 10.5 $hr.^{-1}$ (Na benzoate doses of 1–4 mequiv.). The determination of K_E in various renal diseases suggests that it may be of value in the study of renal function. There is some suggestion that K_S determination may be useful in the study of the delay of hippurate synthesis that has been observed in some forms of hepatic damage.

597. Yardley, H. J.
Composition of normal and pathological urine with estimate of concentration of analysed substances. CLIN. CHIM. ACTA 3:280–287 (1958).

Six normal and 14 pathological urines were analysed for inorganic ions, creatinine, urea, and protein. The results of these determinations were compared with the total salt concentration, total concentration of dissolved particles, and total solids. Na, K, Ca, Mg and NH_4 normally accounted for nearly all the cations present in urine. In one pathological specimen which contained large amounts of amino acids, a high concentration of undetermined cations was demonstrated. Cl, SO_4, and HCO_3 accounted for about 80 percent of the anions present in urine. One pathological urine showed a concentration of undetermined anions higher than normal. If the vapor pressure due to urea, creatinine and inorganic ions was subtracted from the total vapor pressure, unanalysed constituents were found to make up about 20 percent of the total in normal urine. Abnormally high values for unanalysed constituents were also found in urine from a patient with the nephrotic syndrome.

598. Zenisek, A., et al.
Fractional composition of sweat produced by heat and strenuous work. III. Effect of previous baths. CAS. LEK. CESK. 100:170–175, 10 Feb 1961. (In Czech)

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